UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Date: June 06, 2000

MEMORANDUM

SUBJECT: REVISED OCCUPATIONAL AND RESIDENTIAL EXPOSURE ASSESSMENT AND RECOMMENDATIONS FOR THE REREGISTRATION ELIGIBILITY DECISION DOCUMENT FOR PROPARGITE

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Please find the review of propargite.
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EXECUTIVE SUMMARY

This is a revision of the original *Occupational and Residential Exposure Assessment and Recommendations Document for Propargite*, (S. Tadayon February 10, 2,000). This chapter has been revised to correct errors and address comments made by the registrant. The major changes to the assessment include: the revision of the REI for Citrus, Grapes, Tree nuts and Mint.

This document contains the occupational exposure assessment for agricultural uses of propargite. **There are no registered uses of propargite for recreational, residential or other public (non-occupational) settings.** The document also considers potential risk mitigation measures such as personal protective equipment (PPE) and engineering controls for handlers and proposed restricted entry intervals (REIs) for postapplication activities. The scope of the document covers all registered propargite uses including WPS (Worker Protection Standard) uses for agricultural crops (e.g., citrus, vegetable crops, tree fruits, etc.), along with outdoor ornamental uses.

Propargite, Sulfurous acid, 2-[4-(1, 1-dimethyl-ethyl) phenoxy] cyclohexyl-2-propynyl ester, is an acaricide with trade names that include Omite and Comite. It is an organosulfite chemical that functions on contact with larval and adult mites, but has only limited ovicidal activity. The common mites controlled by propargite include among others panonychus, tetranychus, eotetranychus, bryobia, oligonychus, and typhlodromus. The occupational use sites include alfalfa, almond, avocado, beans, boysenberry, carrot, cherry, Christmas tree plantations, clover, conifers, corn (field, pop, sweet), cotton, currant, date, filbert, grapefruit, jojoba, grapes, hops, lemon, lime, macadamia nut, mint, nectarine, orange, ornamental (shade trees, herbaceous plants, woody shrubs and vines), prune, peanuts, persimmon, potatoes (white, Irish), quince, raspberry, sorghum, sugar beets, tangerines, and walnut. A wide variety of application techniques have been identified that could potentially be used to apply propargite such as fixed -wing- aircraft, tractor-drawn equipment, air blast, and hand held equipment. Propargite is formulated as a manufacturing product (90.6 percent active ingredient), four emulsifiable concentrate liquids (up to 73.6 percent active ingredient), and four wettable powders (32 percent active ingredient). The wettable powder is always packaged in water soluble bags.

Acute toxicity categories for the technical grade propargite are Toxicity category III for oral dermal and inhalation, and toxicity category I for primary eye and dermal irritation. Assessment of risk were based on the toxicologic endpoints selected by HIARC. For estimating dermal risk, short- and intermediate-term animal studies reflecting oral administration of the pesticide were used, along with, a dermal absorption factor of 14%. Short- term dermal exposures (1-7 days) were compared to a NOAEL of 6 mg/kg/day and intermediate-term exposures (7-180 days) were compared to a NOAEL of 4 mg/kg/day.

For assessing short- and intermediate-term inhalation risk an acute inhalation toxicity study in rats was used. Rats were exposed by inhalation route (nose only) to propargite. Mortality at the lowest level was observed within 24 hours of exposure (1/10). At 1.3 mg/L, all animals (10/10) died between days 2 and 17. Signs of toxicity included labored respiration, decreased activity, nasal discharge, anogenital staining, matted coats, at all levels. Weight loss

was observed in all animals; however, the survivors exceeded their pretest weights at termination. Necropsy revealed discoloration of the lungs. Some showed signs of gastrointestinal distress and discoloration of the skin. Although this is an acute LC50 study, it was selected for assessing inhalation risk since mortality was seen at all dose levels. Survivors exhibited clinical signs (weight loss and histopathology to the lungs). An additional uncertainty factor of 10X (MOE = 1000) was selected due to the use of a LOAEL and the concern for the severity of the effects (death) at the lowest dose (0.31 mg/L or 49.6 mg/kg).

A battery of mutagenicity studies adequately demonstrates the lack of mutagenic effects exerted by propargite. There is, however, a carcinogenicity concern associated with propargite and it has been classified as a B2 carcinogen (CARC July 23, 1992) based upon the development of tumors in the jejunum of Sprague-Dawley rats at 400 and 800 ppm dose levels (no carcinogenicity was observed in the CD-1 mouse or Wistar rats). In a memo submitted on November 23, 1999 by Lori L. Brunsman, Statistician, a revised **Q_1* of 2.01 x 10^{-1}** $(mg/kg/day)^{-1}$ was established. The revised upper bound estimate of unit risk, $Q_1^*(mg/kg/day)^{-1}$, of propargite is based upon male rat fatal jejunum sarcoma tumor rates in human equivalents.

Current HED policy is to assume the exposure duration for short-term assessments to be 1 to 7 days and the duration of intermediate-term exposure to be 7 days to several months. Although information is not available to determine what percentage of applicators apply propargite for more than 7 days, it is reasonable to believe that uses of propargite by commercial operators may encompass an intermediate-term duration. No chronic (i.e., more than 180 days per year) agricultural uses have been identified.

Multiple exposure studies of agricultural workers (handlers) of propargite were conducted by the registrant and submitted to the Agency. These data, along with surrogate data from the Pesticide Handlers Exposure Database (PHED) Version 1.1, were used to assess potential exposures resulting from handling and applying propargite. Potential exposures and internal doses were calculated using unit exposures (i.e., normalized to amount of active ingredient handled - mg/lb ai handled). The amount of propargite assumed handled per day was derived from the various application rates and the number of acres that could be applied in a single day. Dermal and inhalation margins of exposure (MOEs) are presented.

Short-term handler exposure scenarios resulted in risk assessment expressed as MOEs, ranges from less than 1 to 2,570. A total of 71 MOEs were calculated for the various application rates assessed in each scenario. Based on the maximum level of protection (e.g., various levels of PPE or engineering controls) all of the MOEs are estimated to be greater than 100.

The results of the **intermediate-term handler** assessments indicate that all potential exposure scenarios provide at least one application rate with a total MOE(s) greater than or equal to 100 at either the **maximum PPE** (i.e., long pants, long sleeved shirts, and chemical resistant gloves while using open systems) or using **engineering controls** (i.e., closed systems). In the majority of cases, it is dermal exposure rather than the inhalation exposure driving the total

MOEs. More specifically, the MOEs for all the scenarios range from 1 to 2,000. In total, 71 MOEs were calculated for the various application rates. Based on the maximum level of protection (i.e., various levels of PPE or engineering controls) all MOEs are greater than 100.

Postapplication exposure studies were also conducted by the registrant and submitted to the Agency. These studies included passive dosimetry data, along with dislodgeable foliar residues (DFRs). Data were collected for activities associated with re-entering and harvesting treated raw agricultural commodities to include dry-beans, citrus, grape, hops, corn, cotton, almonds and apples. These data were used in this assessment in conjunction with chemical-specific and HED standard values for transfer coefficients to assess potential exposures to workers reentering treated sites. All activities and crops that are potentially treated with propargite have not been monitored. Therefore, in the absence of data the assessment of postapplication exposures in this document are based on a grouping of activities associated with various representative crops. The potential for dermal contact during postapplication activities (e.g., harvesting) is assessed using a matrix of potential dermal contact rates by activity and associated crops with groupings of crops.

The handler and postapplication risk assessment in this document are believed to be reasonable high end representations of propargite uses. There are, however, many uncertainties in these assessments. The uncertainties include but are not limited to the following:

- Imprecise matching of exposure duration between animal toxicology studies and human exposure estimates;
- extrapolating exposure and DFR data by the amount of active ingredient handled or applied;
- not all of the exposure data are of high confidence because of the lack of replicates and/or inadequate QA/QC in the studies and
- using crop-specific DFR data to assess other crops.

These uncertainties are inherent in most pesticide exposure assessments. The conservative nature of the assessments, however, are believed to be protective of the handlers and reentry workers.

California **incident** data for propargite reported cases of skin illnesses, some of which can be quite severe requiring extensive time off work to recover. A large proportion of cases resulted from field reentry and worker activities involving extensive contact with treated foliage such as turning cane for grapes and harvesting citrus. Both eye and skin problems are commonly reported among applicators who handle propargite without proper protection. (Jerome Blondell, 11/22/99) Field worker experience and reported incident data suggest that the skin irritation of propargite can be severe for several days after treatment Longer REIs established in this document would help reduce incidences. This has been demonstrated in California when they extended the REIs in 1991 for various agricultural crops.

1.0 BACKGROUND

Purpose

In this document, which is for use in EPA's development of the propargite Reregistration Eligibility Decision Document (RED), EPA presents the results of its review of the potential human health effects of occupational and residential exposure to propargite.

Criteria for Conducting Exposure Assessments

An occupational and/or residential exposure assessment is required for an active ingredient if (1) certain toxicological criteria are triggered and (2) there is potential exposure to handlers (mixers, loaders, applicators, etc.) during use or to persons entering treated sites after application is complete. For propargite, both criteria are met.

1.1 Summary of Toxicity Concerns Relating to Agricultural Exposures

Acute Toxicology Categories

Table 1 presents the acute toxicity categories as outlined in the Hazard Identification Document (June 22, 1999).[1]

Table 1: Acute Toxicity Categories for Propargite

Guideline No.	Study Type	MRID #(S).	Results	Toxicity Category
81-1	Acute Oral-Rat	42857001	LD_{50} = 2639 mg/kg for males 2947 mg/kg for females 2800 mg/kg combined	III
81-2	Acute Dermal-Rabbit	42857002	LD_{50} > 2000 mg/kg	III
81-3	Acute Inhalation-Rat	42857003	LC_{50} = 0.95 mg/L for males 0.95 mg/L for females 0.89 mg/L combined	III
81-4	Primary Eye Irritation-Rabbit	42857004	Corrosive	I
81-5	Primary Skin Irritation-Rabbit	42857005	Corrosive	I
81-6	Dermal Sensitization-Guinea Pig	42857006	Sensitizer	N/A

Other Endpoints of Concern

The report of the Hazard Identification Assessment Review Committee (HIARC) for propargite, dated June 22, 1999, identified toxicological endpoints of concern for propargite. The endpoints and associated uncertainty factors used in assessing the risks for propargite are presented in Table 2.

Table 2: Endpoints selected by HIARC for Assessing Occupational and Residential Risks for Propargite

EXPOSURE SCENARIO Duration (Route)	DOSE (mg/kg/day)	ENDPOINT	STUDY TYPE/ MRID
Short-Term [1] (Dermal)	NOAEL= 6	maternal systemic LOAEL (8 mg/kg/day) based on decreased body weight	2-3 days exposure Gavage Developmental Toxicity in Rabbits 413363-01
Intermediate-Term [1] (Dermal)	NOAEL= 4	parental LOAEL (20 mg/kg/day) based on reduction in body weight	10 weeks oral exposure Reproductive Toxicity in Rats 413524-01
Long-Term [1] (Dermal)	NOAEL= 4	Decreased body weight / body weight gain and increased mortality. LOAEL (20 mg/kg/day)	24 months Oral Chronic Feeding and Carcinogenicity in Rats 417509-01
Short Term [2] (Inhalation)	LOAEL[3]= 0.31mg/L or 49.6 mg/kg	LOAEL of 0.31mg/L based on increased mortality	1 day inhalation nose only Acute Inhalation in Rats 428570-03
Intermediate Term [2] (Inhalation)			
Long Term [2] (Inhalation)			
Cancer Q_1^{*} [1] Chronic	2.01 x10^{-1} (mg/kg/day)$^{-1}$		18 months Mouse 24 months Rats

[1] A 14% dermal absorption factor was used to account for route to route extrapolations. MOEs below 100 are considered to be a concern.

[2] MOE below 1000 are considered to be a concern. The addition of 10X factor due to the severity of the effects at the lowest dose tested
(100 % absorption factor used for this risk assessment).

[3] [conversion mg/L to mg/kg: 0.31 mg/L X 10 L/hr X 4 hrs = 12.4 mg; 12.4 mg / 0.25 kg = 49.6 mg/kg]

1.2 Summary of Use Patterns and Formulations

At this time products containing propargite are intended for **occupational** use only. Occupational uses include ornamental and/or shade trees, ornamental herbaceous plants, ornamental woody shrubs and vines, food and non food crops.

Type of pesticide/target pests

Propargite, Sulfurous acid, 2-[4-(1, 1-dimethyl-ethyl) phenoxy] cyclohexyl-2-propynyl ester, is an acaricide with trade names that include Omite and Comite. Table 3 presents a list of propargite's active products. It is an organosulfite miticide that functions on contact with larval and adult mites, but has only limited ovicidal activity. The common mites controlled by propargite include among others

- **Tetranychidae**: Mcdanieli, Atlanticus, Pacificus, Urticas, Cannabarinus, Neocalidoncus, Turkestani, Viennensis Zacher, Ulmi, Citri, Sexamaculatus, Willamette, Banksi, Carpini, Pruni, Hicoria, Arborea, Praetiosa, Rubrioculus, Redlikorzevi, Pratensis, Licis, Coffeae, Yothersi, Punicae, Ununguis;
- **Eriophyidae**: Schlechtendall, Cornutus, Sheldoni, Lycopersici, Lycil, Pyri, Oleivora, Vitis, Podocarpi Keifer;
- **Tarsonemidae:** Pallidus, Translucens;

Formulation types and percent active ingredient

Propargite is formulated as a manufacturing use product (90.6 percent active ingredient), four emulsifiable concentrate liquids (up to 73.6 percent active ingredient), and four wettable powder (32 percent active ingredient) formulations. The wettable powders are always packaged in water soluble packages.

Table 3 Summery of active Propargite Products

PRODUCT NAME	% ACTIVE INGREDIENT	EPA REG #/FORMULATION
OMITE® - Technical	90.6	400-95
OMITE® -30W	32	400-82/WP
OMITE® -57E (not sold in US)	57	400-83/EC
OMITE® - 6E	69.2	400-89/EC
COMITE® (Ag- miticide)	73.6	400-104/EC
COMITE® II	69.6	400-154/EC
OMITE® -CR (CA ONLY)	32	400-425/WP
OMITE® -CR (also marketed under labeled name Ornamite)	32	400-426/WP
OMITE® -30WS	32	400-427/WP

Registered use sites, application rates and frequency of application

Table 4 represent information on registered use sites, application rates and frequency of application per growing season for propargite. The crop grouping for the assessment of propargite used the crop grouping system developed by Markle, et.al[2]. The grouping is based on cultural practices, leaf size, leaf shape and type of pests attracted to the plants. Propargite can be applied to agricultural crops from early season up to harvest time. Application rate covers various type of equipment used to apply propargite.

Table 4: Use Patterns, Application Rate, and Frequency of Application for Propargite

Use Site		Application Rate Range lb ai/acre	Frequency of Application per year
Crop Grouping	**Specific Crop**		
Roots and Tuber Vegetable	Carrot, Potato, Sugar beet	1.5-2.5	2
Legume Vegetable	Bean, dry	2.5	2
Citrus Fruits	Grapefruit, Lemon, Lime, Orange, Tangerine	1.5 - 4.5	2
Pome Fruits	Quince	1.5	2
Stone Fruits	Cherry, Nectarine, Prune	1.5-3.0	2
Berries	Boysenberry, Current, Raspberry (Black and Red)	1.5	2
Small Fruits	Grapes	3.0	2
Tree Nuts	Almond, Filbert, Macadamia Nut, Pecan, Pistachio, Walnut	1.5 - 4.5 (3.0 almond)	2
Cereal Grains	Corn (non specified, field, pop, sweet), Sorghum	1.5 - 2.5	2
Non -Grass Animal Feed	Alfalfa, Clover	1.5 - 2.5	Not Specified
Tropical and Subtropical Fruits	Avocado, Date, Persimmon	1.5 - 4.5	2
Oil Seed	Cotton, Peanut, Jojoba	1.6	2 3 (cotton)
Herbs and Spices	Hops, Mint	1.5 - 2.5	2
Ornamental Plants	Christmas Tree plantation (including conifers seed orchard), Ornamental and/or Shade Trees, Ornamental Herbaceous	0.5 - 2.5	3

1.3 Methods and Types of Equipment Used for Mixing/Loading/Applying

The following use patterns are associated with the application equipment:

- Aerial (spray) Equipment: foliar applications to fruit/nut trees, cranberries, field crops (e.g., alfalfa, sorghum, corn), cotton, vegetable crops, specialty crops (e.g., Christmas trees, mint, peanuts), roots and tuber vegetable (e.g., carrot, sugar beet) .
- Chemigation Equipment: Roots and vegetable (e.g., potatoes) and field crops. The exposure to the handlers using chemigation equipment is represented by the mixer/loader and the amount handled is assumed to be equivalent to that of the aerial applications.
- Groundboom Equipment: fruit/nut orchard floors, field crops, cotton, and vegetable crops.
- Airblast Equipment: fruit/nut/ornamental tree foliage.
- High Pressure Handwand Equipment: non bearing nursery stock.

1.4 Incident reports

BACKGROUND

The following data bases have been consulted for the poisoning incident data on the active ingredient Propargite (PC Code:097601):

1) OPP Incident Data System (IDS) - reports of incidents from various sources, including registrants, other federal and state health and environmental agencies and individual consumers, submitted to OPP since 1992. Reports submitted to the Incident Data System represent anecdotal reports or allegations only, unless otherwise stated. Typically no conclusions can be drawn implicating the pesticide as a cause of any of the reported health effects. Nevertheless, sometimes with enough cases and/or enough documentation risk mitigation measures may be suggested.

2) Poison Control Centers - as the result of a data purchase by EPA, OPP received Poison Control Center data covering the years 1993 through 1996 for all pesticides. Most of the national Poison Control Centers (PCCs) participate in a national data collection system, the Toxic Exposure Surveillance System which obtains data from about 65-70 centers at hospitals and universities. PCCs provide telephone consultation for individuals and health care providers on suspected poisonings, involving drugs, household products, pesticides, etc.

3) California Department of Food and Agriculture (replaced by the Department of Pesticide Regulation in 1991) - California has collected uniform data on suspected pesticide poisonings since 1982. Physicians are required, by statute, to report to their local health officer all occurrences of illness suspected of being related to exposure to pesticides. The majority of the incidents involve workers. Information on exposure (worker activity), type of illness (systemic, eye, skin, eye/skin and respiratory), likelihood of a causal relationship, and number of days off work and in the hospital are provided.

4) National Pesticide Telecommunications Network (NPTN) - NPTN is a toll-free information service supported by OPP. A ranking of the top 200 active ingredients for which telephone calls were received during calendar years 1984-1991, inclusive has been prepared. The total number of calls was tabulated for the categories human incidents, animal incidents, calls for information, and others.

PROPARGITE REVIEW

I. Incident Data System

Please note that the following cases from the IDS do not have documentation confirming exposure or health effects unless otherwise noted.

Incident#1280-23

A pesticide incident occurred in 1994, when a spray applicator got the chemical in his eyes. Specific symptoms were not mentioned. No further information on the disposition of the case was reported.

Incident#4066-12

A pesticide incident occurred in California in 1996, when 49 field workers lifted canes in grape fields that were wet with dew. Many of the workers clothes became soaking wet and they experienced burning, itching, and a rash on their arms, neck, chest, and stomach. From information collected by the Agricultural Commissioner's staff it appeared that the label was followed. There was evidence of non-compliance with the re-entry interval of 30 days. Results from analysis of foliage samples confirmed residues of propargite on the grape foliage. All of these workers were seen at the primary medical care center. No further information on the disposition of the case was reported.

Incident#5995-1

A pesticide incident occurred in 1997, when five workers experienced skin and eye irritations after formulating and packaging a chemical which was caused by abnormally high levels of dust being generated in the pack-room. No further information on the disposition of the case was reported.

Incident#7346-1

A pesticide incident occurred in 1985, when a worker was inadvertently drenched with spray from an air blast sprayer used to treat a grape vineyard. The worker experienced vomiting within thirty minutes and later developed chronic asthma and other respiratory problems. These symptoms were not consistent with exposure to propargite and there may have been exposure to a second

pesticide that was responsible for these symptoms. No further information on the disposition of the case was reported.

II. Poison Control Center Data - 1993 through 1996

From 1993 through 1996 there were 62 exposures to propargite reported to Poison Control Centers participating in the Toxic Exposure Surveillance System. A total of 40 of these exposures were reported to be non-occupational including 33 adults and children six years old and over and 7 children under age six. Twenty-two cases of exposure were reported to be occupationally related. Twenty-one of these cases occurred in California and therefore may also be reported in the section below concerning California data. No detailed analysis is performed because there were too few cases in any one category. Of the total cases 23 were reported to have a minor medical outcome and 3 cases were reported to have a moderate medical outcome. There were no fatalities or life-threatening cases. The most common symptoms reported included nausea, oral irritation, chest pain, dizziness, headache, and eye and dermal effects. A total of 25 of these cases were seen in a health care facility, however, none were admitted for hospitalization. Compared to all other pesticides, propargite has a favorable profile suggesting low risk of moderate or serious effects.

III. California Data - 1982 through 1996

Detailed descriptions of 923 cases submitted to the California Pesticide Illness Surveillance Program (1982-1996) were reviewed. In 671 of these cases, propargite was judged to be responsible for the health effects. Only cases with a definite, probable or possible relationship were reviewed. Propargite ranked 44th as a cause of systemic poisoning in California for the years 1982-1994. All of the systemic cases reported in this period were in an agricultural setting with roughly one-third occurring among handlers and two-thirds among field workers.

Table A presents the types of illnesses reported by year for the time period 1982 through 1996. Table B gives the total number of workers that took time off work as a result of their illness and how many were hospitalized and for how long.

Table A. Cases Due to Propargite Exposure in California Reported by Type of Illness and Year, 1982-1996.

Year	Illness Type				
	Systemic[b]	Eye	Combination.[c]	Skin	Total
1982	2	9	2	40	53
1983	6	18	5	24	53
1984	3	13	4	63	83
1985	1	9	-	37	47
1986	-	7	1	143	151
1987	1	5	4	25	35
1988	3	7	-	81	91
1989	3	3	-	6	12
1990	5	4	1	7	17
1991	-	3	-	3	6
1992	-	5	-	15	20
1993	2	4	-	4	10
1994	3	2	1	5	11
1995	2	-	-	70	72
1996	2	2	1	5	10
Total	33	91	19	528	671

[b] Category includes cases where skin, eye, or respiratory effects were also reported.

[c] Category includes combined irritative effects to eye, skin, and respiratory system.

Table B. Number of Persons Disabled (taking time off work) or Hospitalized for Indicated Number of Days After Propargite Exposure in California, 1982-1996.

	Number of Persons Disabled	Number of Persons Hospitalized
One day	55	-
Two days	25	-
3-5 days	50	-
6-10 days	18	-
more than 10 days	4	-
Unknown	161	5

A total of 528 persons had skin illnesses or 79% of 671 persons. Data covering the years 1982-1989 found that propargite was the leading cause of skin-related injuries among all pesticides. For the years 1990-1994, propargite dropped to seventh place among specific active ingredients. Worker activities associated with exposure to propargite are presented in Table C below.

Table C. Illnesses by Activity Categories for Propargite Exposure in California, 1982-1996.

Activity Category	Illness Category				
	Systemic[b]	Eye	Skin	Combination[c]	Total
Applicator	7	45	64	10	126
Mixer/Loader	3	22	35	4	64
Coincidental	2	4	9	2	17
Field Residue	13	14	411	3	441
Drift	5	-	3	-	8
Other	2	6	7	-	15
Total	32	91	529	19	671

[a] Coincidental=accidental exposure to application strength dilution but not directly involved in pesticide handling activity; Drift= exposure to pesticide that has drifted from intended targets.
[b] Category includes cases where skin, eye, or respiratory effects were also reported

[c] Category includes combined irritative effects to eye, skin, and respiratory system

According to the above activity categories, field residue was associated with the majority (66%) of the exposures. These illnesses included symptoms of chest tightness, shortness of breath, headache, sore throat, coughing, dermatitis, rash on arms, neck, chest and eyes, and eye irritation. In 1988, 26 workers harvesting nectarines developed rashes in orchards treated with propargite and

two other pesticides. Samples of foliar dislodgeable residues suggested that propargite was the cause of the dermatitis cases.

Dermatitis developed in 114 orange pickers in a single incident in 1986. One-third of the workers developed peeling indicating severe dermatitis (Saunders et al. 1987). As a result of this and other large outbreaks the reentry interval was extended from 2-7 days (depending on crop) to 14-42 days in 1989 resulting in a significant reduction in propargite-related illness (Mehler et al. 1992).

IV. National Pesticide Telecommunications Network

On the list of the top 200 chemicals for which NPTN received calls from 1984-1991 inclusively, propargite was ranked 116th with 28 incidents in humans reported and 3 incidents in animals (mostly pets).

VI. Conclusions

According to California data, it appears that a majority of cases involved skin illnesses some of which can be quite severe requiring extensive time off work to recover. A large proportion of cases resulted from field reentry and worker activities involving extensive contact with treated foliage such as turning cane for grapes and harvesting citrus. Both eye and skin problems are commonly reported among applicators who handle propargite without proper protection.

VII. Recommendations

Appropriate personal protection equipment such as the use of gloves and eye protection should be mandatory for handlers and field workers who may have extensive exposure to propargite. Extended reentry intervals are needed to protect workers who do not use personal protective equipment, particularly in climates where propargite may persist on foliage for several weeks.

2.0 OCCUPATIONAL EXPOSURES

2.1 Handler Exposures & Assumptions

EPA has determined that there are potential exposures to mixers, loaders, applicators, or other handlers during usual use-patterns associated with propargite. Based on the use patterns and potential exposures described above, 14 major agricultural exposure scenarios are identified in this document to represent the extent of propargite uses.

Agricultural exposure scenarios include: (1a) mixing/loading liquids for aerial application, (1b) mixing/loading liquids for chemigation, (1c) mixing/loading liquids for groundboom application, (1d) mixing/loading liquids for orchard airblast sprayer application, (1e) mixing/loading liquids for application of high pressure handwand, (2a) mixing/loading wettable powder for aerial application, (2b) mixing/loading wettable powder for groundboom application, (2c) mixing/loading wettable powder for orchard airblast sprayer application, (2d) mixing/ loading wettable powder for application of high pressure handwand, (3) applying sprays with fixed-wing aircraft, (4) applying sprays using a groundboom sprayer, (5) applying sprays with an airblast sprayer, (6) applying liquids with a high pressure handwand and (7) flagging during aerial spray application.

In most cases, HED assesses the exposure and risk to mixer/loaders and applicators separately for tractor drawn applications (i.e., airblast, groundboom, and granular spreaders) in the RED chapter. This practice has evolved, not because it is believed that there are always separate job functions, but rather because of the limited amount of information regarding these practices along with limited exposure data.

For occupational RED chapters process, HED has adopted a methodology to present the risks separately for some scenarios and combine others. Most of the hand- held equipment such as backpack sprayers, and push type granular spreaders are assessed as a combined function. With these types of small operations the mixing, loading, and applying are almost always carried out by the same individual and there are data available to estimate exposure from these activities. For equipment such as fixed-wing-aircraft, groundboom tractors, and airblast sprayers the applications are assessed separately from the individual who mixes and loads the formulated product. HED assumes that the pilots are rarely involved in the mixing/loading. By separating the two job functions, HED can determine the most appropriate PPE or engineering control without requiring the handler to wear PPE throughout the entire workday or engineering controls that are not needed.

The potential handler exposures are assessed in this RED chapter using the toxicological endpoints and uncertainty factors associated with the active ingredient. Therefore, the PPE and engineering controls are determined by the assessment of the active ingredient and not the currently required risk mitigation measures on Propargite labels. This distinction of determining risk mitigation measures based on the active ingredient instead of the label required PPE is also important because of the nature of the end-use products. For example, some end-use products require additional PPE that are not necessary for the active ingredient because of the end-use product's potential for eye and/or skin irritation based on inerts. Conversely, the Agency does not want to mandate additional PPE (e.g., heat stress issues) if it is not required based on the endpoint and uncertainty factors. There are some PPE, such as chemical-resistant aprons and/or head gear, that the Agency uses as qualitative measures because there are no recognized protection factors (PF) to assess their effectiveness. The Agency's risk managers require these types of PPE as

additional mitigation. For example, chemical-resistant aprons are often required to protect mixer/loaders from accidental spills.

2.1.1 Submitted Studies

Uniroyal submitted applicators exposure studies in support of the reregistration process for propargite. Theses studies include:

- Airblast applicator exposure studies (MRID Nos. 418486-05 and 420997-02)
- Groundboom applicator exposure study (MRID No. 418486-05)

It is HED's policy to combine chemical specific studies with similar surrogate data from the Pesticide Handlers Exposure Database (PHED) to assess handler exposures for regulatory actions. In addition, the exposure estimates from PHED (V1.1) are used to assess exposure where no chemical specific data are available.

2.1.2 Summary of Occupational Handler Exposures

Table 5 presents the exposure scenarios, application rates, and area (i.e., acres) potentially treated that have been used in the exposure calculations. Propargite labels include a multitude of uses and a wide range of application rates. Therefore, the rates presented in Table 5 are not all inclusive and an attempt has been made to assess a range of application rates to capture exposure associated within each scenario.

The above chemical-specific exposure data are used in the Agency's assessment to assess the potential handler exposure to propargite. PHED[3] V1.1 has also been used to supplement the chemical-specific data and to assess the exposure scenarios which were not monitored by the registrant. HED's policy is to supplement chemical-specific data with available surrogate data in PHED to increase the sample size. This policy is in affect because individual chemical-specific studies do not necessarily encompass the variety of equipment in use throughout the country and the large variability of exposures among handlers. While data from PHED provides the best available information on handler exposures, it should be noted that some aspects of the included studies (e.g., duration, acres treated, pounds of active ingredient handled) may not accurately represent labeled uses in all cases. PHED was designed by a Task Force of representatives from the U.S. EPA, Health Canada, the California Department of Pesticide Regulation, and member companies of the American Crop Protection Association. PHED is a software system consisting of two parts -- a database of measured exposure values for workers involved in the handling of pesticides under actual field conditions and a set of computer algorithms used to subset and statistically summarize the selected data. Currently, the database contains values for over 1,700 monitored individuals (i.e., replicates).

Users select criteria to subset the PHED database to reflect the exposure scenario being evaluated. The subsetting algorithms in PHED are based on the central assumption that the

magnitude of handler exposures to pesticides are primarily a function of activity (e.g., mixing/loading, applying), formulation type (e.g., wettable powders, granulars), application method (e.g., aerial, groundboom), and clothing scenarios (e.g., gloves, double layer clothing). Once the data for a given exposure scenario has been selected, the data are normalized (i.e., divided by) by the amount of pesticide handled resulting in standard unit exposures (milligrams of exposure per pound of active ingredient handled). Following normalization, the data are statistically summarized. The distribution of exposure values for each body part (e.g., chest, upper arm) is categorized as normal, lognormal, or "other" (i.e., neither normal nor lognormal). A central tendency value is then selected from the distribution of the exposure values for each body part. These values are the arithmetic mean for normal distributions, the geometric mean for lognormal distributions, and the median for all "other" distributions. Once selected, the central tendency values for each body part are composited into a "best fit" exposure value representing the entire body.

Table 5: Exposure Variables for Agricultural Uses of Propargite

Exposure Scenario (Scenario #)	Are Chemical Specific Monitoring Data Available? [a]	Application Rates (lb ai/acre)[b]	Daily Acres Treated [c]
Mixer/Loader Exposure			
Mixing/Loading Liquids for Aerial Application (1a)	No	1.5 min / 2.5 max carrot, sugar beet, potatoes, dry beans, mint, corn (field, pop, sweet), sorghum grain, alfalfa, clover, peanut, jojoba	350
		2.5 grapefruit, orange	125
		2.5 min/4.5 max almond, walnut	
		1.6 cotton	350-1200
		hops max 2.5	80
Mixing/Loading Liquids for Chemigation (1b)	No	2.0 min /2.5 max Potatoes, corn (sweet)	350
Mixing/Loading Liquids for Groundboom Application (1c)	No	1.5 min /2.5 max potatoes, corn (field, pop, sweet) sorghum grain, alfalfa, clover, cotton, peanut, jojoba and mint	80
		2.5 hops	40
Mixing/Loading Liquids for Airblast Sprayer Application (1d)	No	1.5 quince, cherry, prunes, orange, grapefruit, lemon, lime, tangerine, boysenberry, current, raspberry, hops, date, persimmons,	40
		2.5 Xmas tree plantations, conifers, shade trees	40
		1.5 min/max 3.0 almond, filbert, macadamia nut, pecan, pistachio	40
		4.5 walnut	40
Mixing/Loading Liquids for Application of High Pressure Handwand (1e)	No	1.5 non-bearing nursery stock	5

Table 5: Exposure Variables for Agricultural Uses of Propargite			
Exposure Scenario (Scenario #)	Are Chemical Specific Monitoring Data Available? [a]	Application Rates (lb ai/acre)[b]	Daily Acres Treated [c]
		3.0 nectarine	125
		4.0 walnut	125
Mixing/Loading Wettable Powder for Groundboom Application (2b)	No	1.6 peanut	80
Mixing/ Loading Wettable Powder for Airblast Sprayer Application (2c)	No	4.5 max grapefruit, orange, lemon, avocado	40
		3.0 grapes	40
Mixing/ Loading Wettable Powder for Application of High Pressure Handwand (2d)	No	0.5 min / 2.5 max non-bearing nursery stock	5
Applicator Exposure			
Applying Sprays with Fixed-Wing Aircraft –Enclosed Cockpit (3)	No	1.5 min / 2.5 max carrot, sugar beet, potatoes, dry beans, mint, corn (field, pop, sweet), sorghum grain, alfalfa, clover,	350
		2.5 grapefruit, orange	125
		2.5 min/ 4.5 max almond, walnut	
		1.5 peanut, jojoba	125
		1.6 cotton	350-1200
		hops max 2.5	80
Applying Sprays with a Groundboom Sprayer (4)	Yes 41848606	1.5 min / 2.5 max potatoes, corn (field, pop, sweet) sorghum grain, alfalfa, clover, cotton, peanut, jojoba and mint	80
Applying Sprays with an Airblast Sprayer (5)	Yes 41848605 42099702	1.5 min quince, cherry, prunes, orange, grapefruit, lemon, lime, tangerine, boysenberry, current, raspberry, hops, date, persimmons,	40
		2.5 Christmas tree plantations, conifers, shade trees	40
		1.5min / max 3.0 almond, filbert, macadamia nut, pecan, pistachio	40
		4.5 walnut	40
Applying Liquids with a High Pressure Handwand (6)	No	0.5 min / 2.5max non-bearing nursery stock	5
Flagger Exposure			
Flagging During Aerial Spray Application (7)	No	1.5 min / 2.5 max carrot, sugar beet, potatoes, dry beans, mint, corn (field, pop, sweet), sorghum grain, alfalfa, clover, peanut, jojoba	350
		2.5 grapefruit, orange	125
		2.5 min/4.5 max almond, walnut	
		1.6 cotton	350-1200

Table 5: Exposure Variables for Agricultural Uses of Propargite			
Exposure Scenario (Scenario #)	Are Chemical Specific Monitoring Data Available? [a]	Application Rates (lb ai/acre)[b]	Daily Acres Treated [c]
		2.5 max hops	80

[a] Available chemical-specific passive dosimetry data have been combined with PHED (V1.1).
[b] Application rates are the maximum or range found on EPA Reg. Nos. 400-82, 400-83, 400-89, 400-104, 400-154, 400-425, 400-426, 400-427.
[c] Daily acres treated are based on HED's estimates of acreage that would be reasonably expected to be treated in a single day for each exposure scenario of concern.

2.1.3 Summary of Uncertainties

The handler exposure assessments encompass all of the major uses of propargite throughout the country. It is difficult to assess all of the "typical" agricultural uses (i.e., actual or predominate application rates and farm sizes), and therefore, an assessment has been developed that believed to be realistic and yet provides a reasonable certainty that the exposures are not underestimated. The assumptions and uncertainties are identified below to be used in risk management decisions:

- *Application Rates:* The application rates are the maximum allowable that were identified on the available product labels. A range of application rates were used when the maximum application rates for various crops varied widely. Application rates have been rounded off.

- *Amount Handled:* The daily acres treated are HED standard values (see Table 5). Deviations from these standard values include the aerial acreage for orchard fruits, tree nuts, Christmas trees, and forest plantations. The orchard acreage is assessed at 125 acres because fruit orchards are grown in smaller plots, cotton field is assessed at 350 to 1200 acres.

- *Unit Exposures:* The unit exposure values calculated by PHED generally range from the geometric mean to the median of the selected data set. To add consistency and quality control to the values produced from this system, the PHED Task Force has evaluated all data within the system and has developed a set of grading criteria to characterize the quality of the original study data. The assessment of data quality is based on the number of observations and the available quality control data. These evaluation criteria and the caveats specific to each exposure scenario are summarized in Appendix A, Table A4. While data from PHED provides the best available information on handler exposures, it should be noted that some aspects of the included studies (e.g., duration, acres treated, pounds of active ingredient handled) may not accurately represent labeled uses in all cases.

2.1.4 Calculations of Exposure

Potential daily dermal exposure is calculated using the following formula:

$$\text{Daily Dermal Exposure}\left(\frac{mg\ AI}{Day}\right) = \text{Dermal Unit Exposure}\left(\frac{mg\ AI}{lb\ AI}\right) \cdot \text{Max. Appl. Rate}\left(\frac{lb\ AI}{Acre}\right) \cdot \text{Max. Area Treated}\left(\frac{Acres}{Day}\right)$$

Potential daily inhalation exposure is calculated using the following formula:

$$\text{Daily Inhalation Exposure}\left(\frac{mg\ ai}{day}\right) =$$
$$\text{Unit Exposure}\left(\frac{\mu g\ ai}{lb\ ai}\right) \text{ x Conversion Factor}\left(\frac{1mg}{1{,}000\ \mu g}\right) \text{ x Use Rate}\left(\frac{lb\ ai}{A}\right) \text{ x Daily Acres Treated}\left(\frac{A}{day}\right)$$

These calculations of potential daily exposure to propargite by handlers are used to calculate the absorbed doses and total risk to those handlers (see *Occupational Risk* section).

2.1.5 Calculation of Cancer

Cancer risk assessments for handler completed by EPA using a baseline exposure scenario and, as needed, increasing levels of risk mitigation (PPE and engineering controls) to achieve cancer risks that are not of concern. Table C in Appendix C present total cancer risk calculations at baseline, with PPE and with engineering controls, respectively, for each exposure scenario.

The calculations of daily dermal and inhalation exposure to propargite by handlers were used to calculate the daily dose, and hence the risks, to those handlers. Potential daily dermal exposure was calculated using the following formula:

$$\text{Daily Dermal Exposure}\left(\frac{mg\ ai}{day}\right) = \text{Unit Exposure}\left(\frac{mg\ ai}{lb\ ai}\right) \text{ x Use Rate}\left(\frac{lb\ ai}{A}\right) \text{ x Daily Acres Treated}\left(\frac{A}{day}\right)$$

Potential daily inhalation exposure was calculated using the following formula:

$$\text{Daily Inhalation Exposure}\left(\frac{mg\ ai}{day}\right) =$$
$$\text{Unit Exposure}\left(\frac{\mu g\ ai}{lb\ ai}\right) \text{ x Conversion Factor}\left(\frac{1mg}{1{,}000\ \mu g}\right) \text{ x Use Rate}\left(\frac{lb\ ai}{A}\right) \text{ x Daily Acres Treated}\left(\frac{A}{day}\right)$$

The daily dermal and inhalation doses were calculated using a 70 kg body weight using the following formulas:

$$\text{Daily Inhalation Dose}\left(\frac{mg\ ai}{kg/day}\right) = \text{Daily Inhalation Exposure}\left(\frac{mg\ ai}{day}\right) \text{ x } \left(\frac{1}{\text{Body Weight (kg)}}\right)$$

$$\text{Daily Dermal Dose}\left(\frac{\text{mg ai}}{\text{Kg/Day}}\right) = \text{Daily Dermal Exposure}\left(\frac{\text{mg ai}}{\text{Day}}\right) x \left(\frac{1}{\text{Body Weight (Kg)}}\right) x\ 0.14\ \text{Dermal Absorption Factor}$$

$$\text{Total Daily Dose} = \text{Daily Dermal Dose}\left(\frac{\text{mg}}{\text{kg/day}}\right) + \text{Daily Inhalation Dose}\left(\frac{\text{mg}}{\text{kg/day}}\right)$$

The lifetime average daily dose (LADD) was calculated using the following formula:

$$\text{LADD}\left(\frac{\text{mg}}{\text{kg/day}}\right) = \text{Daily Total Dose}\left(\frac{\text{mg}}{\text{kg/day}}\right) x \left(\frac{\text{days worked}}{365\ \text{days per year}}\right) x \left(\frac{35\ \text{years worked}}{70\ \text{year lifetime}}\right)$$

Total cancer risk was calculated using the following formula:

$$\text{Total Cancer} = \text{LADD x } Q1^{*}$$

where $Q_1^* = 2.01 \times 10^{-1}\ (\text{mg/kg/day})^{-1}$

The following assumptions and factors were used in order to complete this cancer risk assessment:

- The average body weight of 70 kg is used, representing a typical adult.
- Career duration is assumed to be 35 years. This represents a typical working lifetime.
- Lifetime is assumed to be 70 years.
- Dermal absorption is assumed to be 14 percent, and inhalation absorption is assumed to be 100 percent of the oral dose. The dermal and inhalation doses were added together to represent total daily dose.
- The $Q1^*$ used in the cancer assessment was $2.01 \times 10^{-1}(\text{mg/kg/day})^{-1}$.
- BEAD provided data for both commercial applicator and private grower; therefore, calculations were performed for both, where applicable. Two exposure frequencies were used in the calculations, the first represented the maximum number of applications per site per season to represent private use (7), and the second frequency applied a factor of two to the first frequency to represent commercial handlers making multiple applications per site per season (14).

2.2 Risk From Handler Exposures

Using the daily dermal exposure scenarios identified in the exposure section, EPA calculated the potential risk to persons from handler exposures and post-application exposures to propargite.

Potential dermal and inhalation daily exposures for occupational handlers were calculated using the following formulas (14 percent dermal absorption was assumed):

$$\text{Daily Inhalation Exposure}\left(\frac{mg\ ai}{day}\right) = \text{Unit Exposure}\left(\frac{\mu g\ ai}{lb\ ai}\right) \times \text{Conversion Factor}\left(\frac{1\ mg}{1{,}000\ \mu g}\right) \times \text{Use Rate}\left(\frac{lb\ ai}{A}\right) \times \text{Daily Acres Treated}\left(\frac{A}{day}\right)$$

$$\text{Daily Dermal Exposure}\left(\frac{mg\ ai}{day}\right) = \text{Unit Exposure}\left(\frac{mg\ ai}{lb\ ai}\right) \times \text{Use Rate}\left(\frac{lb\ ai}{A}\right) \times \text{Daily Acres Treated}\left(\frac{A}{day}\right)$$

The inhalation and dermal daily doses were calculated using the following formulas:

$$\text{Daily Inhalation Dose}\left(\frac{mg\ ai}{kg/day}\right) = \text{Daily Inhalation Exposure}\left(\frac{mg\ ai}{day}\right) \times \left(\frac{1}{\text{Body Weight (kg)}}\right) * 1\ (100\%)$$

$$\text{Daily Dermal Dose}\left(\frac{mg\ ai}{kg/Day}\right) = \text{Daily Dermal Exposure}\left(\frac{mg\ ai}{Day}\right) \times \left(\frac{1}{\text{Body Weight (kg)}}\right) * 0.14\ (14\%)$$

The MOEs were calculated using the following formulas:

$$MOE = \frac{NOAEL\left(\frac{mg}{kg/day}\right)}{\text{Dermal Daily Dose}\left(\frac{mg}{kg/day}\right)}$$

$$MOE = \frac{NOAEL\left(\frac{mg}{kg/day}\right)}{\text{Inhlation Daily Dose}\left(\frac{mg}{kg/day}\right)}$$

2.2.1 Risk From Handler Exposures

Handler exposure assessments are completed by EPA using a baseline exposure scenario and, if required, increasing levels of risk mitigation (PPE and engineering controls) to achieve a margin of exposure of 100 for dermal exposure and 1,000 for inhalation exposure or cancer risk of 1.0E-4. Appendix A presents the short-term and intermediate term MOE calculations for baseline exposure plus the risk mitigation measures of personal protective equipment (PPE) and engineering controls using the passive dosimetry results from the chemical-specific studies combined with surrogate data from PHED for the agricultural uses of propargite. Appendix C Table C presents the cancer risk calculations for baseline exposure plus the risk mitigation measures of personal protective equipment (PPE) and engineering controls.

EPA calculated the baseline MOE (short-term and intermediate-term) and cancer for each of the exposure scenarios using the following **baseline** PPE assumptions:

- all occupational handlers are wearing footwear (socks plus shoes or boots);
- occupational mixers and loaders using open mixing techniques are wearing long-sleeved shirts, long pants, and no gloves;
- occupational applicators who use open cab airblast or tractor-driven application equipment and handlers flagging for aerial applications are wearing long-sleeved shirts, long pants, and no gloves; and
- occupational handlers (mixers, loaders, and applicators) who use hand-held application equipment are wearing long-sleeve shirts, long pants, and no gloves.

If the baseline short-term or intermediate-term MOE calculated using this baseline PPE was 100 or greater (since the NOAEL is based on data from animal studies) for an exposure scenario, then no further calculations were made. If the baseline short-term or intermediate-term MOE was less than 100 for any exposure scenario, an additional short-term or intermediate-term MOE was calculated based on increasing the level of PPE over the baseline PPE. HED calculated the additional PPE short-term or intermediate-term MOE for each occupational exposure scenario with a baseline total MOE of less than 100, using the following additional **PPE** assumptions:

- all occupational handlers are wearing footwear (socks plus shoes or boots);
- occupational mixers and loaders using open mixing techniques are wearing long-sleeved shirts and long pants and gloves;
- occupational applicators who use open cab airblast or tractor-driven application equipment and handlers flagging for aerial applications are wearing (except flaggers-

no gloves) long-sleeved shirts and long pants (coveralls and chemical resistance head gear for open cab airblast);

- Also, if necessary, an organic vapor respirator represented by a 10-fold protection factor is added to mitigate the risks.

If the additional-PPE short-term or intermediate-term MOE calculated using this additional-PPE was 100 or greater (the NOAEL is based on data from animal studies) for an exposure scenario, then no further calculations were made. If the additional-PPE short-term or intermediate-term MOE remained less than 100 for any occupational exposure scenario, an addition short-term or intermediate-term MOE was calculated based on mandatory use of engineering controls where feasible. Engineering controls are not available for occupational handlers (mixers, loaders, and applicators) who use hand-held application equipment. HED calculated the engineering-control short-term or intermediate-term MOE for each occupational exposure scenario with an additional-PPE short-term or intermediate-term MOE of less than 100, using the following **engineering control** assumptions:

- all occupational handlers are wearing footwear (socks plus shoes or boots);

- occupational mixers and loaders handling liquid formulations using a closed system are wearing chemical-resistant gloves plus long-sleeved shirts and long pants;

- occupational mixers and loaders handling wettable powders using a closed system (water-soluble packages) are wearing long-sleeved shirts and long pants, and chemical-resistant gloves; and

- occupational applicators who use aerial, airblast, or tractor-driven application equipment and handlers flagging for aerial applications are located in enclosed cabs or cockpits and are wearing long-sleeved shirts and long pants, and no gloves.

2.2.2 Summary of Handler MOEs and Cancer

Table 6 summarizes the numeric MOE values for both the short- and intermediate-term exposure durations as well as cancer values. The MOEs are presented for baseline, PPE and engineering controls. Cancer values also summarized at different levels of mitigation. Base line represents long pants, long sleeved shirts and no gloves, PPE represents exposure while wearing long pants, long sleeved shirts and chemical resistant gloves, and an organic vapor respirator (10-fold protection factor) while using open mixing/loading systems and open cab tractors. The engineering controls represent exposure while wearing long pants, long sleeved shirts and no gloves (except chemical resistant gloves for closed loading systems) while using closed mixing/loading systems and enclosed cabs/cockpits.

The results of the **short-term** exposure duration indicate that the MOEs range from less than 1 to 2,570. A total of 71 MOEs were calculated for the various application rates assessed in each scenario. Based on the maximum level of protection (e.g., various levels of PPE or engineering controls) all MOEs are greater than 100.

The results of the **intermediate-term** exposure duration indicate that the total MOEs range from 1 to 2,000. A total of 71 MOEs were calculated for the various application rates assessed in each scenario. Based on the maximum level of protection (e.g., various levels of PPE or engineering controls) all MOEs are greater than 100.

The results of the **Cancer** Risk indicate that the values range from 1.2E-2 to 8.2E-6 at the baseline,1.1E-4 to 4.2E-6 at PPE and 1.1E-4 to 8.4E-7 at engineering control.

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite

Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
Mixer/Loader Exposure																
Mixing/Loading Liquids for Aerial Application (1a)	Roots and Tuber Vegetable	carrot, sugar beet, potatoes, dry beans, mint	Min 2.0	350	1	160	NA	<1	125	NA	4135	NA	NA	7.8E-3/ 1.6E-2	8.4E-5/ 1.7E-4	2.1E-5/ 4.8E-5
	Legume Vegetable		Max 2.5		1	130	NA	<1	100	NA	3305	NA	NA	9.9E-3/ 2.0E-2	1.1E-4/ 2.1E-4	3.0E-5/ 6.0E-5

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
	Herbs & Spices	hops	Max 2.5	80	4	560	NA	3	435	NA	14465	NA	NA	2.2E-3/ 4.4E-3	2.4E-5/ 4.8E-5	7.0E-6/ 1.4E-5
	Citrus Fruits	grapefruit, orange	Max 2.5	125	3	360	NA	2	280	NA	9260	NA	NA	3.4E-3/ 6.8E-3	3.8E-5/ 7.6E-5	1.1E-5/ 2.2E-5
	Tree Nuts	almond, walnut	Min 2.5	125	3	360	NA	2	280	NA	9260	NA	NA	3.4E-3/ 6.8E-3	3.8E-5/ 7.6E-5	1.1E-5/ 2.2E-5
			Max 4.5		2	200	NA	1	155	NA	5145	NA	NA	6.2E-3/ 1.3E-2	6.8E-5/ 1.4E-4	2.0E-5/ 4.0E-5
	Cereal Grains	corn (field, pop, sweet), sorghum grain, alfalfa, clover	Min 1.5	350	2	215	NA	1	165	NA	5510	NA	NA	5.8E-3/ 1.2E-2	6.4E-5/ 1.3E-4	1.9E-5/ 3.7E-5
	Non-grass Animal Feed		Max 2.5		1	130	NA	<1	100	NA	3305	NA	NA	9.9E-3/ 2.0E-2	1.1E-4/ 2.1E-4	3.1E-5/ 6.2E-5
	Oil Seed	cotton	Max 1.6	350	2	200	NA	1	155	NA	5165	NA	NA	6.2E-3/ 1.3E-2	6.8E-5/ 1.4E-4	2.0E-5/ 4.0E-5
				1200	<1	60	155	<1	45	120	1505	NA	NA	2.2E-2/ 4.4E-2	2.4E-4/ 4.8E-4	6.8E-5/ 1.4E-4
		peanut, jojoba	Min 1.5	350	2	215	NA	1	165	NA	5510	NA	NA	5.8E-3/ 1.2E-2	6.4E-5/ 1.3E-4	1.9E-5/ 3.7E-5
			Max 2.5		1	130	NA	<1	100	NA	3305	NA	NA	9.9E-3/ 2.0E-2	1.1E-4/ 2.1E-4	3.0E-5/ 6.0E-5
	Ornamental plants	Christmas Tree conifer seed	Max 2.5	125	3	360	NA	2	280	NA	9260	NA	NA	3.4E-3/ 6.8E-3	3.8E-5/ 7.6E-5	1.1E-5/ 2.2E-5
Mixing/Loading Liquids for Chemigation (1b)	Roots and vegetable	potatoes, corn (sweet)	Min 2.0	350	1	160	NA	1	125	NA	4135	NA	NA	7.8E-3/ 1.6E-2	8.4E-5/ 1.7E-4	2.4E-5/ 4.8E-5
	Cereal Grains		Max 2.5		1	130	NA	<1	100	NA	3305	NA	NA	9.9E-3/ 2.0E-2	1.1E-4/ 2.1E-4	3.0E-5/ 6.0E-5

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
Mixing/Loading Liquids for Groundboom Application (1c)	Roots and Vegetable	potatoes, corn (field, pop, sweet) sorghum grain, alfalfa, clover, cotton, peanut, jojoba and mint	Min 1.5	80	7	930	NA	6	725	NA	24110	NA	NA	1.4E-3/ 2.7E-3	1.5E-5/ 2.9E-5	4.2E-6/ 8.4E-6
	Cereal Grains															
	Non-grass Animal Feed															
	Oil Seed		Max 2.5		4	560	NA	3	435	NA	14465	NA	NA	2.2E-3/ 4.4E-3	2.4E-5/ 4.8E-5	7.0E-6/ 1.4E-05
	Herbs and Spices															
Mixing/Loading Liquids for Airblast Sprayer Application (1d)	Pome Fruits	quince, cherry, prunes, orange, grapefruit lemon, lime, tangerine, boysenberry, current, date raspberry, hops, persimmons,	1.5	40	15	1865	NA	10	1450	NA	48220	NA	NA	6.6E-4/ 1.3E-3	7.2E-6/ 1.5E-5	2.2E-6/ 4.4E-6
	Stone fruits															
	Citrus Fruits															
	Berries															
	Herbs and Spices															
	Tropical and Subtropical Fruits															
	Tree Nuts	almond, filbert, macadamia nut, pecan, pistachio	Min 1.5		15	1865	NA	10	1450	NA	48220	NA	NA	6.6E-4/ 1.3E-3	7.2E-4/ 1.5E-5	2.2E-6/ 4.4E-6
			Max 3.0		7	930	NA	6	725	NA	24110	NA	NA	1.4E-3/ 2.7E-3	1.5E-5/ 3.0E-5	4.2E-6/ 8.4E-6
		walnut	Max 4.5		5	620	NA	4	485	NA	16075	NA	NA	2.0E-3/ 4.0E-3	2.2E-5/ 4.4E-5	6.4E-6/ 1.3E-5
	Ornamental plants	Christmas Tree plantation, conifers, shade trees	Max 2.5		9	1120	NA	7	870	NA	28935	NA	NA	1.1E-3/ 2.2E-3	1.2E-5/ 2.5E-5	3.6E-6/ 7.2E-6

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
Mixing/Loading Liquids for Application of High Pressure Handwand (1e)	Non-bearing nursery stock	all crops	Max 1.5	5	120	NA	NA	90	11595	NA	385780	NA	NA	8.5E-5/ 1.7E-4	3.0E-5/ 6.0E-5	4.2E-7/ 8.4E-7
Mixing/Loading Wettable Powder for Aerial Application (2a)	Stone fruits	nectarine	Max 3.0	125	2	40	325	1	30	255	215	2155	NA	5.8E-3/ 1.2E-2	6.2E-4/ 1.3E-3	3.3E-5/ 6.7E-5
	Tree Nuts	walnut	Max 4.0		1	30	245	1	25	190	160	1615	NA	7.7E-3/ 1.4E-2	8.4E-4/ 1.7E-3	4.2E-5/ 9.7E-5
	Ornamental plants	Christmas Tree	Max 2.5	125	2	50	390	2	40	305	255	2585	NA	4.8E-3/ 9.7E-3	4.1E-4/ 8.3E-4	2.8E-5/ 5.6E-5
Mixing/Loading Wettable Powder for Groundboom Application (2b)	Oil Seed	peanut	Max 1.6	80	5	120	NA	4	90	745	625	6310	NA	2.0E-3/ 4.0E-3	2.4E-4/ 4.8E-4	1.1E-5/ 2.2E-5
Mixing/ Loading Wettable Powder for Airblast Sprayer Application (2c)	Citrus fruits	grapefruit, orange, lemon, avocado	Min 3.0	40	6	125	NA	5	100	NA	665	6730	NA	1.9E-3/ 3.7E-3	2.2E-4/ 4.4E-4	1.1E-4/ 2.1E-4
	Tropical and subtropical fruits		Max 4.5		4	85	680	3	65	530	445	4485	NA	2.8E-3/ 5.6E-3	3.2E-4/ 6.4E-4	1.6E-5/ 3.2E-5
	Herbs & spices	hops	Min 2.0		9	190	NA	7	145	NA	1000	NA	NA	1.2E-3/ 2.5E-3	1.5E-4/ 2.9E-4	7.0E-6/ 1.4E-5
			Max 2.5		7	150	NA	5	120	NA	800	8075	NA	1.6E-3/ 3.1E-3	1.8E-4/ 3.6E-4	8.8E-6/ 1.8E-5
	Small Fruits	grapes	Max 3.0		6	125	NA	5	100	NA	665	6730	NA	1.9E-3/ 3.7E-3	2.2E-4/ 4.4E-4	1.1E-5/ 2.1E-5
Mixing/ Loading Wettable Powder for Application of High Pressure Handwand (2d)	Non- bearing Nursery Stock	all crops	Min 0.5	5	280	NA	NA	215	NA	NA	32000	NA	NA	4.0E-5/ 8.0E-5	1.6E-6/ 3.3E-6	NA
			Max 2.5		55	1210	NA	45	NA	940	6400	NA	NA	1.9E-4/ 3.8E-4	8.2E-6/ 1.7E-5	NA
Applicator Exposure																

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																	
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
Applying Sprays with Fixed-Wing Aircraft–Enclosed Cockpit (3)	Roots and Tuber Vegetable	carrot, sugar beet, potatoes, dry beans, mint	Min 2.0	350	NA	NA	735	NA	NA	570	NA	NA	72940	NA	NA	1.5E-5/ 3.0E-5
			Max 2.5		NA	NA	585	NA	NA	455	NA	NA	58355	NA	NA	1.9E-5/ 3.8E-5
	Legume Vegetable															
	Herbs and Spices	hops	Max 2.5	80	NA	NA	2570	NA	NA	2000	NA	NA	255295	NA	NA	4.2E-6/ 8.4E-6
	Citrus fruits	grapefruit, orange	Max 2.5	125	NA	NA	1645	NA	NA	1280	NA	NA	163390	NA	NA	6.6E-6/ 1.3E-5
	Tree Nuts	almond, walnut	Min 2.5		NA	NA	1645	NA	NA	1280	NA	NA	163390	NA	NA	6.6E-6/ 1.3E-6
			Max 4.5		NA	NA	915	NA	NA	710	NA	NA	90770	NA	NA	1.2E-5/ 2.4E-5
	Cereal Grains	corn (field, pop, sweet), sorghum grain, alfalfa, clover	Min 1.5	350	NA	NA	980	NA	NA	760	NA	NA	97255	NA	NA	1.1E-5/ 2.2E-5
	Non-Grass animal Feed		Max 2.5		NA	NA	590	NA	NA	455	NA	NA	58355	NA	NA	1.9E-5/ 3.8E-5
	Oil Seed	peanut, jojoba	Min 1.5	350	NA	NA	980	NA	NA	760	NA	NA	97255	NA	NA	1.1E-5/ 2.2E-5
			Max 2.5		NA	NA	590	NA	NA	455	NA	NA	583550	NA	NA	1.9E-5/ 3.8E-5
		cotton	Max 1.6	350	NA	NA	920	NA	NA	715	NA	NA	91175	NA	NA	1.2E-5/ 2.4E-5
				1200	NA	NA	270	NA	NA	210	NA	NA	26595	NA	NA	4.0E-5/ 8.0E-5
	Stone fruit	nectarine	Max 3.0	125	NA	NA	1370	NA	NA	1065	NA	NA	136155	NA	NA	7.9e-6/ 1.6E-5
	Ornamental plants	Christmas tree, conifer seed	Max 2.5	125	NA	NA	1645	NA	NA	1280	NA	NA	163390	NA	NA	6.6E-6/ 1.3E-5

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
Applying Sprays with a Groundboom Sprayer (4)	Roots and Vegetable	potatoes, corn (field, pop, sweet) sorghum grain, alfalfa, clover, cotton, peanut, jojoba and mint	Min 1.5	80	1530	NA	NA	1190	NA	NA	39100	NA	NA	8.2E-6/ 1.6E-5	7.4E-6/ 1.5E-5	2.4E-6/ 4.8E-6
	Cereal Grain															
	Non-grass animal feed		Max 2.5		920	NA	NA	715	NA	NA	23460	NA	NA	1.6E-5/ 3.2E-5	1.3E-5/ 2.5E-5	4.2E-6/ 8.4E-6
	oil seed															
	herbs and spices															
Applying Sprays with an Airblast Sprayer (5)	pome fruits	quince, cherry, prunes, orange, grapefruit, lemon, lime, tangerine, boysenberry, current, hops, raspberry, date, persimmons, almond, filbert, macadamia nut, pecan, pistachio, walnut, Christmas Tree plantation, conifers, shade trees	Min 1.5	40	120	NA	NA	95	140	NA	12860	NA	NA	9.1E-5/ 1.8E-4	6.4E-5/ 1.3E-4	1.2E-5/ 2.4E-5
	stone fruits															
	citrus fruits															
	berries															
	tropical & subtropical fruits		Max 4.5		40	120	750	30	90	570	4285	NA	NA	2.8E-4/ 5.6E-4	1.9E-4/ 3.8E-4	4.2E-5/ 8.4E-5
	small fruits															
	tree nuts															
	ornamental plants															
Applying Liquids with a High Pressure Handwand (6)	non-bearing nursery stock	all crops	Min 0.5	5	570	NA	NA	445	NA	NA	17580	NA	NA	2.3E-5/ 4.6E-5	1.2E-5/ 2.3E-5	NA
			Max 2.5		115	NA	NA	90	250	NA	3515	NA	NA	1.1E-4/ 2.2E-4	5.8E-5/ 1.2E-4	NA
Flagger Exposure																
Flagging During Aerial Spray Application (7)	Roots & tuber Vegetable	carrot, sugar beet, potatoes, dry beans, mint	Min 2.0	350	335	NA	NA	260	NA	NA	14170	NA	NA	3.6E-5/ 7.2E-5	NA	NA
	legume vegetable		Max 2.5		265	NA	NA	210	NA	NA	11335	NA	NA	4.4E-5/ 8.8E-5	NA	NA

Table 6: Exposure Variables, MOEs and Cancer for Agricultural uses of Propargite																
Exposure Scenario (Scenario #)	Crop Group	Crop	Application Rates (lb ai/acre)	Daily Acres Treated	Short-Term Dermal MOEs			Intermediate-Term Dermal MOEs			Inhalation MOEs			Cancer		
					Base line	PPE	Eng Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. Control	Base line	PPE	Eng. control
	herbs and spices	hops	Ma 2.5	80	1170	NA	NA	910	NA	NA	49600	NA	NA	9.6E-5/ 1.9E-5	NA	NA
	Citrus fruits	grapefruit, orange	Max 2.5	125	750	NA	NA	580	NA	NA	31745	NA	NA	1.7E-5/ 3.3E-5	NA	NA
	Tree Nut	almond, walnut	Min 2.5	125	750	NA	NA	580	NA	NA	31745	NA	NA	1.7E-5/ 3.3E-5	NA	NA
			Max 4.5		415	NA	NA	325	NA	NA	17635	NA	NA	2.9E-5/ 5.8E-5	NA	NA
	cereal grain	(field, pop, sweet), sorghum grain, alfalfa, clover	Min 1.5	350	445	NA	NA	345	NA	NA	18895	NA	NA	2.8E-5/ 5.6E-5	NA	NA
	non-grass animal feed		Max 2.5		265	NA	NA	210	NA	NA	11335	NA	NA	4.6E-5/ 9.3E-5	NA	NA
	oil seed	cotton	Max 1.6	350	415	NA	NA	325	NA	NA	17715	NA	NA	2.8E-5/ 5.6E-5	NA	NA
				1200	120	NA	NA	100	NF	NA	5165	NA	NA	1.0E-4/ 2.0E-4	NA	NA
		Peanut, jojoba	Min 1.5	350	445	NA	NA	345	NA	NA	18895	NA	NA	2.8E-3/ 5.6E-3	NA	NA
			Max 2.5		265	NA	NA	210	NA	NA	11335	NA	NA	4.6E-5/ 9.3E-5	NA	NA
	Stone fruits	nectarine	Max 3.0	125	625	NA	NA	485	NA	NA	26455	NA	NA	1.9E-5/ 3.8E-5	NA	NA
	Ornamental plants	Christmas tree conifer seed	Max 2.5	125	750	NA	NA	580	NA	NA	31745	NA	NA	1.7E-5/ 3.4E-5	NA	NA

See foot notes on appendix A

2.2.3 Insufficient Data

At this time, there are insufficient data to adequately address the handler exposure to post harvest treatment of cherries. The cherries post harvest application rate is 0.0045 lb ai/gallon (Reg. No. 400-426, 400-427). Since there are no information on the type of activities involved, the handler exposure can not be assessed at this time.

3.0 Postapplication Exposure & Assumption

EPA has determined that there are potential short and intermediate-term postapplication exposures to individuals entering treated fields for the purpose of postapplication activities.

For the purpose of conducting this assessment, indicator crop groups/activities, and assumptions regarding application rates and dermal transfer coefficients for these crop groups were selected that are likely to be representative of postapplication exposures to propargite. The crop groups/activities listed below were chosen because appropriate residue data were available, and exposure assumptions could be made that would be inclusive of other similar crop types/activities. Although several studies have been submitted, it was still necessary to use standard transfer coefficients and crop-specific residues as substitutes to represent other crops. Also, the development of these exposure scenarios followed the guidance provided in the Science Advisory Council for Exposure Policy Memo Number 003. The postapplication exposure scenarios include the following:

- All activities (weeding and irrigation, harvesting) associated with **legume vegetable**, **roots and tuber vegetable** and **non grass animal feed** groups. This scenario is assumed to be representative of exposures from typical weeding and irrigation activities. DFR and passive dosimetry data for dry beans were used, based on studies using an application rate of 2.46 lb ai/acre. This application rate is consistent with the application rates for most crops in these groups. A dermal transfer coefficient of 60 cm^2/hr was calculated from a weeder reentry study (MRID No. 426891-04) to represent weeding and hoeing activities associated with these groups. For irrigation a generic dermal transfer coefficient of 1,000 cm^2/hr was used. Harvesting is highly mechanized.

- All activities (harvesting, weed control, irrigation, fertilization, pruning, and frost protection) associated with **citrus** fruits. This scenario is assumed to be representative of exposures from all activities. DFR data for navel oranges were used, based on a study using maximum application rates of 3.15 lb ai/acre and 4.5 lb ai/acre. A generic dermal transfer coefficient of 10,000 cm^2/hr was used to represent all activities associated with citrus fruits.

- All activities (pruning, brush removal, weed control, mowing, tree spraying, tree removal and replanting, irrigation, and harvesting) associated with **stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants .** This scenario is

assumed to be representative of exposures from all activities. DFR data for apple were used, based on a study using application rates of 3.6 lb ai/acre and 1.7 lb ai/acre in states of Vermont and Washington. A range of generic dermal transfer coefficients of 2,500 cm^2/hr, 4,000 cm^2/hr and 10,000 cm^2/hr were uses to represent all activities associated within these groups.

- All activities (pruning, fertilization, pest control, weed control, irrigation, and harvesting) associated with **berries**. This scenario is assumed to be representative of exposures from all activities. DFR data for grape were used, based on a study using a maximum application rate of 2.7 lb ai/acre. Generic dermal transfer coefficients of 4,000 cm^2/hr was used.

- All activities (pruning, fertilization, pest control, leaf removal, weed control, irrigation, cane throwing, girdling and harvesting) associated with **small fruits**. This scenario is assumed to be representative of exposures from all activities. DFR and passive dosimetry data for grapes were used, based on studies using a maximum application rate of 2.7 lb ai/acre. Dermal transfer coefficient of 878 cm^2/hr for tractor driver, 10,246 cm^2/hr (cane turner 14 days), 3,713 cm^2/hr (cane turner 21 days) and 1,895 cm^2/hr (cane turner 28 days) were calculated from a worker reentry study (MRID No.409753-04) to represent cane throwing activities associated with grapes. No chemical specific study was available for raisin grapes, therefore data from two studies (MRID Nos 40985601 and 43223901) were used to establish REI. A transfer coefficient of 5,000 was used for raisin grape.

- All activities (pruning, brush removal , weed control, mowing, tree spraying, irrigation, and harvesting) associated with **tree nuts**. This scenario is assumed to be representative of exposures from all activities. Dermal transfer coefficient of 48.0 cm^2/hr was calculated from a worker reentry study (MRID NO. 418486-04) which represents tree shaker scenario. DFR data for almonds were used, based on a study using a maximum application rate of 3.0 lb ai/acre. A generic dermal transfer coefficient of 4,000 cm^2/hr was used to represent all other activities associated with tree nuts.

- All activities (weeding and irrigation) associated with **cereal grains**. This scenario is assumed to be representative of exposures from typical weeding and irrigation activities. DFR data for corn were used, based on a study using an application rate of 2.46 lb ai/acre. This application rate is consistent with the application rates for most crops in this group. A generic dermal transfer coefficient of 10,000 cm^2/hr was used.

- All activities (weeding and irrigation and harvesting) associated with **herbs and spices**. This scenario is assumed to be representative of exposures from typical weeding and irrigation activities. DFR data for hops were used, based on a study using an application rate of 1.35 lb ai/acre. A generic dermal transfer coefficient of 4,000 cm^2/hr for early season and 10,000 cm^2/hr for late season were used for hops. Since no DFR data

submitted for mint, therefore data from a dry bean study (MRID No. 420118-01were used. A generic dermal transfer coefficient of 1,000 was used.
Currently, HED conducts post-application exposure and risk assessments assuming that the workers are wearing "typical" work clothing – long-sleeved shirt, long pants, shoes and socks. Additional personal protective equipment is not considered in these assessments

- All activities (weeding and irrigation, harvesting and pest management) associated with **oil seed crop** group. This scenario is assumed to be representative of exposures from typical weeding and irrigation activities. DFR data for cotton were used, based on studies using an application rate of 1.64 lb ai/acre. This application rate is consistent with the application rates for most crops in these groups. A dermal transfer coefficient of 63 cm^2/hr was calculated from a weeder reentry study (MRID No.426891-03) to represent weeding activities associated with oil seed crop group. For early season scouting and late season scouting a generic dermal transfer coefficient of 1,000 cm^2/hr and 4,000 cm^2/hr were used respectively.

3.1 Postapplication Exposures & Assumptions

3.1.1 Submitted Studies

The following are the postapplication data submissions used in the risk assessment:

- **MRID No. - 420118-01. COMITE® EC on Dry Beans - Dislodgeable Foliar Residue**
  Propargite (COMITE® EC) was applied to two replicate treated plots and one control plot located in California using a groundboom sprayer. The test substance was applied at a rate of 2.46 lb ai/acre. Samples were collected before each application, at 1 hour, and 3, 9 and 16 days following the first application and at 1 hour, and 3, 7, 14, 21, 28 and 35 days following the second application. The recovery range is 83-106% and the average recovery is 94%. The coefficient of variation is 11%. This study meets in part the acceptability criteria outlined in Subdivision K series 875-group B of the Pesticide Assessment Guidelines.

- **MRID No. - 426891-04. COMITE®EC-Reentry for Dry Beans**
  The purpose of this study was to determine potential inhalation and dermal exposure to COMITE® when a field worker performs a typical weeding or hoeing activity in a bean field which has been treated with COMITE®. The test plot planted with dry beans was located in Grant County, Ephrata, WA. Two applications, the maximum number per year approved by EPA, were applied during the course of the study. The maximum label rate of 3 pints COMITE® per acre (i.e., 2.46 lb ai/acre) in the minimum groundboom application volume of 20 gallons of water per acre (GPA) was used. To summarize, this study meets the acceptability criteria outlined in Subdivision K of the Pesticide Assessment Guidelines except that sampling occurred at only one location.

The quality control/quality assurance aspects of the study were adequate. Propargite dislodgeable residues were used to calculate potential exposure estimates. A transfer coefficient of 60 cm^2/hr was calculated by dividing 92 (adjusted 8-hour μg/hour) by 0.193 µg/cm^2 (dislodgeable foliar residue level).

- **MRID No. - 409090-03. OMITE® CR and OMITE® 30 W on Navel Oranges - Dislodgeable Foliar Residue**
  The study was conducted in eastern Fresno County, California. Navel oranges of the Nucellar variety were treated with OMITE® CR and OMITE® 30W. Two rates of OMITE® CR (3.15 and 4.5 lb ai/acre) and one rate of OMITE® 30 W (4.5 lb ai/acre) were used for this study. Applications were made with an Aerofan air blast windspeed sprayer. Post- treatment samples were collected at 1 hour, 3, 7, 14, 21, 28, 35, 42, and 63 days in 1986 and 3, 7, 14, 21, 28, 35, 42, 49, 56, and 63 days in 1987. No field recovery or storage stability samples were generated. The mean laboratory recovery is 93.8% and the coefficient of verification is 15 %.The recovery range is 64-118%. The study does not meet all the requirements set forth by Subdivision K of the Pesticide Assessment Guidelines. The major criticism for the study is the lack of storage stability data. Since the laboratory recovery values were within acceptable limits and the sample storage periods was relatively short, the dislodgeable residues values reported provide an indication of the residues that could be present in the field under the conditions of the study.

- **MRID No. - 409090-04. OMITE® 6E, OMITE® CR, OMITE® 30W Dislodgeable Residues on Apple Foliage.**
  The study was conducted at two different locations: Wapato, Washington and Bennington Vermont. OMITE® 6E was applied at a rate of 1.7 lb ai/acre, and OMITE® CR, OMITE® 30W were applied at a rate of 3.6 lb ai/acre.
  Six sets of samples were dislodged 2 to 11 days after they reached the laboratory. Fortified controls were not analyzed, and spiked sample (laboratory) recoveries are in the 69 to 104 percent range.

- **MRID No.- 409753-04. Omite 30W on Grape Worker Reentry Study**
  The study was conducted in a 53 acre commercial grape vineyard located in Madeira, California. The vineyard received two applications of Omite 30W at the rate of 1.28 lb ai/acre per acre (max label rate is 2.88 lb ai/acre). Miniblast sprayer was used for the applications. Ten cane turners were monitored for a 2.5 hour work cycle during the 14, 21, and 28 day reentry intervals. Laboratory recovery data were analyzed for each set of field samples one untreated control sample and one or more control samples fortified with propargite were included. The controls and spiked controls were extracted along with each set of field samples. The limit of detection reported as 0.50 μg/unit. Recoveries were reported in 71 to 119% range. Exposure estimates for the tractor driver were based on the actual residual from hand washes and single layered patches, therefore the estimates represent total deposition. The estimates for the cane turners was based on actual residues from the middle and bottom layered of multilayered patches.

Average one-hour (mg/hour) residue obtained for tractor drivers (2 days), cane turner (14, 21 and 28 days) are 0.57, 6.65, 2.41, and1.23 respectively. Transfer coefficients calculated for tractor drivers (2 days), cane turner (14, 21 and 28 days) are 878, 10246, 3713 and 1895 respectively. Propargite dislodgeable residues were used to calculate potential exposure estimates.

- **MRID No. 409753-01. OMITE®, 30 W Dislodgeable Foliage Residues**
  The study was conducted in a commercial grape vineyard in Madeira, California. The vineyard received two applications of OMITE®, 30 W at a rate of 2.88 lb ai/acre, the highest rate allowed on grapes. Duplicate samples were taken between applications so that they will coincide with workers reentry functions in the field. Laboratory recovery data showed recoveries in the 70 to 110% (mean recovery 88%) range. The study does not meet all of the requirements set forth by Subdivision K of the Pesticide Assessment Guidelines. The major criticism for the study is the lack of storage stability data. Since the samples were analyzed four to five months after extraction, only laboratory recovery values were used to correct the data.

- **MRID No. - 418486-04. Omite 6E on Almond Worker Reentry Study**
  The study was conducted in a 62 acre commercial almond located in Madeira, California. The orchard received two applications of Omite 6E at the maximum rate of 4 pints (2.88 lb ai/acre) per acre. The workers re-entered the field 29 days after the last application to shake the trees. An open cab shaker was used for the study. Each replicate consisted of approximately two hours of shaking. Two workers participated in the study. Each worker was monitored for five replicates. Dermal exposure was measured using a whole body dosimeter consisting of 100 percent cotton long underwear worn under the workers shirt and pants. Laboratory recovery data were analyzed. For each set of field samples, one untreated control sample and one or more control samples fortified with propargite were included. The mean recoveries were reported as 80.8% and 101.3%. Propargite dislodgeable residues were used to calculate potential exposure estimates. Transfer coefficients were also calculated by dividing exposure estimates to dislodgeable foliar residue levels at the time of exposure. Since the laboratory recovery data were within acceptable limits, the study provides some indication about residues that the workers might be exposed to when re-entering treated fields. The transfer coefficients for dermal exposure (47.5 µg/cm^2) was calculated by dividing average one-hour (µg/hour) residue (83.1) by average propargite dislodgeable residues (1.75 µg/cm^2)

- **MRID No. - 418486-03. Omite 6E on Almond - Foliar Dislodgeable Residues**
  The study conducted in a commercial almond orchard located in Madeira County, California. The orchard received two applications of Omite 6E at a rate of 4 (3lb ai/acre) pints of formulation per acre. A rear mini-blast sprayer was used for the applications. The final analysis was conducted approximately 2 months after that. Laboratory recovery data showed recoveries in to 71 % to 118 %. There was one fortified sample for each set of four treated (field) samples. The untreated samples were divided into two

separate samples. One was used as the control (check) sample, and the other was used as the fortified sample. The controls and fortified controls were extracted along with the field collected samples. Storage stability data were not generated. Only laboratory recovery values were used to correct data.

- **MRID No.-416803-02. Comite EC on Corn-Foliar Dislodgeable Residues**
  Propargite (COMITE® EC) was applied to two replicate treated plots and one control plot located in McAllen, Texas using a commercial ground application equipment. The test substance was applied at a rate of 2.46 lb ai/acre. The COMITE® EC was applied in 30 gallons of water per acre, whereas a minimum application volume of 20 gallons is given in the label. At each sampling interval, duplicate samples were collected from the two replicates and one untreated plot. Samples were taken at 1 hr, and on days 3, 7, 14, 21, and 28 postapplication. No field recovery or storage stability samples were generated. Consequently, there is no objective measure of degradation of propargite that may have occurred between the field and the laboratory, and during the time the samples were stored prior to analysis. Laboratory recovery samples were generated. The recoveries range from 75-95% with a coefficient of variation of 9%.

- **MRID No.-413996-01 Omite CR on Hops-Foliar Dislodgeable Residues**
  Propargite (OMITE® CR) was applied to two replicate treated plots and one control plot located in Grauger, WA using a rear type sprayer. The test substance was applied at a rate of 1.35 lb ai/acre. The OMITE® CR was applied in 100 gallons of water per acre, whereas a minimum application volume of 200 gallons is given in the label. At each sampling interval, duplicate samples were collected from the two replicates and one untreated plot. Samples were taken on days 3, 7, 14, 21, and 28 postapplication and at one hr. and on days 3, 7, 14, 21 and 28. No field recovery or storage stability samples were generated. Consequently, there is no objective measure of degradation of propargite that may have occurred between the field and the laboratory, and during the time the samples were stored prior to analysis. Laboratory recovery samples were generated. The recoveries range from 71-116% with a coefficient of variation of 15.2%.

- **MRID No.- 426891-03) Comite EC® on Cotton - Weeder Reentry Study**
  The test plot planted with cotton was located in Yuma, Arizona. Two applications, the maximum number per year approved by EPA, were applied during the course of the study. The application rate was the maximum label rate of 2 pints COMITE®per acre (i.e., 1.64 lb ai/acre) in the minimum groundboom application volume of 25 gallons of water per acre (GPA). Eight male and two female workers participated voluntarily, and weeded an area of approximately 2.8 acres. A one-piece cotton long underwear was worn under typical work clothes (denim jeans and a long sleeved cotton shirt) to measure full body dermal exposure. The control (untreated) samples were collected from a nearby field that had not been treated with propargite. The field fortification recoveries were reported in the 0 to 15 percent range. Recoveries for the low level spikes for the top body dosimeter were also low (53 percent). Two method spikes and

one method control were included for each set of field samples. The laboratory recoveries were reported in 70 to 120 percent range. Residue level were corrected for the average recovery of method spikes. A transfer coefficient of 63 cm^2/hr was calculated by dividing adjusted 8-hour (μg/8-hour residue 61.25) by dislodgeable foliar residue levels (0.91µg/cm^2).

- **MRID No. - 414578-06. COMITE® EC on Cotton - Foliar Dislodgeable Residues** Propargite (COMITE® EC) was applied to plots in King County, California using a "John Deere high-clearance commercial sprayer". The test substance was applied at a rate of 1.64 lb ai/acre. The area treated consisted of two replicate plots Duplicate 40 leaf samples were taken from the treated plots at one hour, 2,7,14,21, and 28 days after the third application, 3, 10, and 17 days after the second application, and 2, 9 and 16 days after the first application. Laboratory recovery sample were within the acceptable range (70 to 120 percent). However, field recovery and storage stability data were not generated.

For the purposes of this assessment, regression analysis were conducted using the natural log-transformed DFR data from the above studies to estimate residue levels on various crops on various days for postapplication using the following equation:

$y = mx + b$ where:
x = days postapplication;
m = slope of the regression line;
b = constant; and
y = residue on day x.

The summary of regression analysis on submitted studies is presented in Table 7.

Table 7 :Summary of Data used for Post Application of Propargite

Crop grouping	DFR Study	Formulation Type		Study Application Rate (lb ai/acre)	R^2	Initial DFR as a % of Appl. Rate (Day 0 measured values)	Transfer Coefficient	Dissipation (% per day)	½ Life (days)
Legume vegetable, roots and tuber vegetable and non-grass animal feed	Dry beans (MRID 420118-01, 426891-04	Comite EC		2.46	0.96	18.9	60	11	5.97
Citrus	Navel oranges MRID 409090-03	Omite CR		3.15	0.78	9.2	NA	6	12.1
		Omite 30W		3.15	0.65	4.9	NA	4	15.5
		Omite CR		4.5	0.74	10.4	NA	5	12.9
Stone fruits, Pome fruits, Tropical and subtropical fruits, ornamental plants	Apple MRID 409090-04	Omite CR	VT	3.6	0.98	4.2	NA	10	6.8
			WA	3.6	0.21	4.5	NA	4	18.1
		Omite 30W	VT	3.6	0.99	4.2	NA	10	6.5
			WA	3.6	0.37	2.1	NA	3	20.6
Small fruits	Grape MRID 409753-01 MRID 409753-04	Omite 30W		2.7	0.72	2.7	878	6	10.7
							1895		
							3713		
							10246		
Tree nuts	Almond MRID 418486-04 MRID 418486-03	Omite 6E		3.0	0.79	6.0	48	5	13.6
Cereal grain	Corn MRID 416803-02	Comite EC		2.46	0.72	6.4	NA	18	3.5
Herbs and spices	Hops MRID 426891-03	Comite EC		1.35	0.72	14.5	NA	4	18.6
Oil seed	Cotton MRID 426891-03 MRID 414578-06	Comite EC		1.64	0.92	11	63	11	6.2

3.1.2 Summary of Dislodgeable Foliar Residues

The postapplication monitoring studies submitted provide DFR data for **dry beans, orange, almonds, apples, corn, hops, cotton and grapes.** The DFR data in these studies were collected at different number of sites for each of these crops.

The dry beans data (MRID 420118-01) represent DFR levels obtained at an application rate of 2.46 lb ai/acre using the COMITE® EC. The maximum labeled rate for dry beans is 2.46 lb ai/acre on the COMITE® EC (EPA Reg. No. 400-104, 400-154). This study used an application rate of 2.46 lbs ai/acre and two applications. This is consistent with the labeled application rates for dry beans and other crops within the groups. Thus, the DFR data from this study were used unadjusted to estimate dermal postapplication exposures and risks associated with dry beans and other crops within the groups. The coefficient of determination (R^2) and dissipation rates following the second application are presented in the table below.

Summary of dry beans Dissipation Data Based on 0 to 35 DAT sampling Interval

		Comite EC DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data							Half-life (days)	R^2
		0 DAT	3 DAT	7 DAT	14 DAT	21 DAT	28 DAT	35 DAT		
All Sites	Actual	5.2	2.9	1.9	1.0	0.25	0.13	0.11	6.0	0.96
	predicted	4.55	3.21	2.02	0.9	0.40	0.18	0.08		

All sites 0, 3, 7, 14, 21, 28 and 35 DAT

The citrus data (MRID 409090-03) represent DFR levels obtained at the application rates for citrus at 3.15 lb ai/acre (400-82, 400-89, 400-104, 400-425, 400-426, 400-427) and 4.5 lb ai/acre (CA 86007000) using OMITE CR® and OMITE 30W®. The raw data values were averaged and transcribed to the summary table.

Summary of Citrus Dissipation Data Based on 0 to 63 DAT sampling Interval

		Omite CR DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data at 3.15 lb ai/acre[1]								Half-life (days)	R^2
		0 DAT	1 DAT	3 DAT	7 DAT	21 DAT	28 DAT	42 DAT	63 DAT		
all sites	Actual	3.27	3.15	2.35	2.33	0.498	0.51	0.69	ND	12.10	0.78
	Predicted	2.83	2.62	2.33	1.86	0.83	0.56	0.25	ND		
	Omite CR DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data at 3.15 lb ai/acre										
	Actual	1.73	1.63	1.37	1.34	0.16	0.16	0.32	ND	15.50	0.65
	Predicted	1.05	1.00	0.92	0.77	0.41	0.30	0.16	ND		

	Omite CR DFR (μg/cm^2) -- Predicted Values Based On Log Transformed Data at 4.5 lb ai/acre								Half-life (days)	R^2
	0	7	14	21	28	34	42	63		
Actual	5.30	5.77	4.35	3.87	0.95	1.115	1.25	0.36	12.94	0.74
Predicted	4.67	4.43	3.98	3.21	1.52	1.04	0.49	0.16		

All sites 0, 7, 14, 21, 28, 34, 42 and 63 DAT

The apple data (MRID 409090-04) represent DFR levels obtained at application rates of 1.7 lb ai/acre using Omite 6E and 3.6 lb ai/acre using OMITE® CR and OMITE® 30W. This study used for stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants, and forest trees. The maximum labeled rate for tropical and subtropical fruits (avocado) is 4.5 lb ai/A (EPA Reg. No. CA81008800). The time vs. residue data plot for Wapato, WA site indicates a complex dissipation process that does not conform to first order kinetics. The predicted DFR levels (μg/cm^2), based on the slope and intercept, are normalized (i.e., DFR data divided by 3.6 and multiplied by 4.5) to account for a potential increase in residues when propargite is applied at its maximum application rate of 4.5 lb ai/acre. The raw data values were averaged and transcribed to the summary table.

Summary of Apple Dissipation Data Based on 0 to 28 DAT sampling Interval

Site		Omite 30 W DFR (μg/cm^2) -- Predicted Values Based On Log Transformed Data							Half-life (days)	R^2
		0 DAT	1 DAT	3 DAT	7 DAT	14 DAT	21 DAT	28 DAT		
Washington	Actual	0.85	0.27	0.32	0.21	0.13	0.26	0.17	20.6	0.37
	Predicted	0.38	0.36	0.34	0.30	0.24	0.19	0.15		
Vermont	Actual	1.70	2.2	1.35	1.08	0.39	0.2	0.11	6.5	0.99
	Predicted	1.99	1.79	1.45	0.95	0.45	0.21	0.10		
Omite CR DFR (μg/cm^2) -- Predicted Values Based On Log Transformed Data										
Washington	Actual	1.8	0.75	1.09	0.71	0.1	0.69	0.5	18.1	0.21
	Predicted	0.93	0.90	0.83	0.71	0.55	0.42	0.32		
Vermont	Actual	1.70	2.35	1.9	1	0.41	0.26	0.13	6.8	0.98
	Predicted	2.14	1.93	1.57	1.05	0.51	0.25	0.12		

All sites 0,1,3,7, 14, 21 and 28 DAT

The grape data (MRID 409753-01) represent DFR levels obtained at the maximum application rate for grape at 2.7 lb ai/A OMITE 30W®. The maximum labeled rate for grape is 2.88 lb ai/A (EPA Reg. No. 400-82). Since there is only less than 10 percent difference between application rate used in the study and maximum labeled rate therefore, the DFR data from this study were used unadjusted to estimate dermal postapplication exposures and risks associated with grape. The coefficient of

determination (R^2) and dissipation rates following the second application are presented in the table below.

Summary of grape Dissipation Data Based on 0 to 35 DAT sampling Interval

		Omite 30 W DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data							Half-life (days)	R^2
		0 DAT	3 DAT	7 DAT	14 DAT	22 DAT	28 DAT	35 DAT		
All Sites	Actual	0.85	1.31	1.14	0.64	0.25	0.20	0.16	10.74	0.71
	Predicted	1.13	1.05	0.92	0.70	0.45	0.25	0.03		

All sites 0, 3,7, 14, 22, 28, and 35 DAT (second application)

The almond data (MRID 418486-03) represent DFR levels obtained at the maximum application rate for almond at 3.0 lb ai/A (EPA Reg. No. 400-89) OMITE 6E®. This is consistent with the labeled application rates for crops in tree nuts group (except walnut). Thus, the DFR data from this study was used unadjusted to estimate dermal postapplication exposures and risk associated with almond and other crops within the groups. The summary of the dissipation data for second application are listed in the table below.

Summary of almond Dissipation Data Based on 0 to 35 DAT sampling Interval

		Omite 6E DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data							Half-life (days)	R^2
		0 DAT	4 DAT	7 DAT	14 DAT	21 DAT	28 DAT	35 DAT		
All Sites	Actual	2.0	3.6	3.1	1.0	1.3	0.77	0.460	13.6	0.79
	Predicted	3.107	2.527	2.164	1.508	1.050	0.731	0.509		

All sites 0, 3,7, 14, 22, 28, and 35 DAT (second application)

The corn data (MRID 416803-02) represent DFR levels obtained at an application rate of 2.46 lb ai/acre using the COMITE® EC. The maximum labeled rate for dry beans is 2.46 lb ai/A on the COMITE® EC (EPA Reg. No. 400-104, 400-154). This study used an application rate of 2.46 lbs ai/acre and two applications. This is consistent with the labeled application rates for corn and other crops within the groups. Thus, the DFR data from this study were used unadjusted to estimate dermal postapplication exposures and risks associated with corn and other crops within the groups. The coefficient of determination (R^2) and dissipation rates following the second application are presented in the table below. The data indicates that the propargite dissipation is biphasic, and therefore, the 0 to 7 DAT sampling intervals were used in determining the predicted residue.

Summary of Corn Dissipation Data Based on 0 to 7 DAT sampling Interval

	Comite EC DFR ($\mu g/cm^2$) -- Predicted Values Based On Log Transformed Data	Half-life (days)	R^2

		0 DAT	3 DAT	7 DAT		
All Sites	Actual	1.74	0.96	0.43	3.5	0.72
	Predicted	1.927	1.026	0.443		

All sites 0, 3 and 7 DAT.

The hops data (MRID 413996-01) represent DFR levels obtained at an application rate of 1.35 lb ai/acre using the OMITE® CR. The maximum labeled rate for hops is 1.5 lb ai/A on the OMITE® CR (EPA Reg. No. 400-89, 400-426). This study used an application rate of 1.35 lbs ai/acre and two applications. This is consistent with the labeled application rates for hops and other crops within the groups. Thus, the DFR data from this study were used unadjusted to estimate dermal postapplication exposures and risks associated with hops and other crops within the groups.

Summary of hops Dissipation Data Based on 0 to 28 DAT sampling Interval

		Omite CR DFR (μg/cm^2) -- Predicted Values Based On Log Transformed Data						Half-life (days)	R^2
		0 DAT	3 DAT	7 DAT	14 DAT	21 DAT	28 DAT		
All Sites	Actual	2.2	3.5	1.7	1.7	1.1	1.0	18.6	0.72
	Predicted	2.682	2.398	2.066	1.592	1.226	0.944		

All sites 0, 3,7, 14, 22, and 28 DAT (second application)

The cotton data (MRID 414578-06) represent DFR levels obtained at an application rate of 1.6 lb ai/acre using the OMITE® CR. The maximum labeled rate for cotton is 1.7 lb ai/A (rounded off) on the OMITE® CR (EPA Reg. No. 400-104, 400-154). This study used an application rate of 1.64 lbs ai/acre and two applications. This is consistent with the labeled application rates for cotton and other crops within the groups. Thus, the DFR data from this study were used unadjusted to estimate dermal postapplication exposures and risks associated with cotton and other crops within the groups.

Summary of cotton Dissipation Data Based on 0 to 28 DAT sampling Interval

		Omite CR DFR (μg/cm^2) -- Predicted Values Based On Log Transformed Data						Half-life (days)	R^2
		0 DAT	3 DAT	7 DAT	14 DAT	21 DAT	28 DAT		
All Sites	Actual	2.43	1.50	0.83	0.46	0.11	0.13	6.2	0.92
	Predicted	1.974	1.56	0.898	0.408	0.186	0.084		

All sites 0, 3,7, 14, 22, and 28 DAT (second application)

3.1.3 Summary of Transfer Coefficients

Transfer coefficients (Tc) are used to relate the DFR values to activity patterns (e.g., harvesting) to estimate potential human exposure. The dermal exposure levels during the activity of weeding or hoeing in the dry beans fields were monitored concurrently with the DFR levels in MRID 420118-01. The transfer coefficients for weeding or hoeing is 60 cm^2/hr. The dermal exposure levels during the activity of cane turning for grapes were monitored concurrently with the DFR levels in MRID 409753-

04. The transfer coefficients for cane turners at 14, 21 and 28 days were 10,246 cm^2/hr, 3,713 cm^2/hr and 1,895 cm^2/hr respectively. The dermal exposure levels during the activity of tree shaking in almond orchard monitored concurrently with the DFR levels in MRID 418486-04. The transfer coefficients for tree shaking is 48 cm^2/hr. The dermal exposure levels during the activity of weeding or hoeing in the cotton fields were monitored concurrently with the DFR levels in MRID 426891-01. The transfer coefficients for weeding or hoeing is 63 cm^2/hr. Additionally, harvesting activities are assessed in this RED using surrogate harvesting transfer coefficient values to estimate potential exposure levels for all crops to determine the reentry intervals (REIs). The results of this assessment are provided in the *Risk from Postapplication Exposure* section below. Since a multitude of crops are treated with propargite, it is necessary to group the exposure potential resulting from postapplication activities. In addition to these three groupings, the available chemical-specific data and surrogate scout transfer coefficient were used to estimate REIs for dry beans, grape, almond and cotton. HED's agricultural default transfer coefficients for field crops with a potential for dermal contact are 2,500, 4,000,10,000, and 15,000 cm^2/hr, respectively. These transfer coefficients are believed to represent a conservative reliable estimate of potential exposures while harvesting. **These standard values for transfer coefficients are in use until the Agriculture Reentry Task Force (ARTF) provides activity-specific data.** Table 8 presents a matrix for potential activity-specific contact rates and crop groupings used in the postapplication assessment.

Table 8-Summary of Transfer Coefficients for Propargite

Group	Crop	Activities	Transfer Coefficients (cm^2/hr)	Application Rate (lb ai/A)
Roots and Tuber Vegetable	Carrot, Potato, Sugar Beet, Bean dry, Alfalfa, Clover	Weeding/hoeing	60 (MRID #426891-04)	Min 1.5-2.5
Legume Vegetables		Irrigation	1,000	Max 2.5
Non- Grass Animal Feed				
Citrus Fruits	Orange, Lemon, Lime, Tangerine, Grapefruit	Weed control, Irrigation, Fertilization, Pruning, harvesting	10,000	Min 1.5
				Max 4.5
Pome Fruits	Quince	Tree pruning, Irrigation, Fertilization, Fruit harvesting	2,500	1.5
			4,000	
			10,000	
Stone Fruits	Cherry, Nectarine, Prune	Harvesting (Picking, hauling, bin handling), Pruning, Fertilization, Pest control, Irrigation, Fruit thinning, Herbicide application,	2,500	1.5-3.0
			4,000	
			10,000	
Berries	Boysenberry, Currant Raspberry	Pruning, Fertilization, Pest control, Irrigation, Harvesting	4,000	1.5

Table 8-Summary of Transfer Coefficients for Propargite				
Group	Crop	Activities	Transfer Coefficients (cm^2/hr)	Application Rate (lb ai/A)
Small fruits	Grape	Pruning, Pest control, Irrigation, leaf removal (mechanically and manually),Harvesting (mechanically and manually)	1,895, 3,713 10,246 (MRID 409753-04)	3.0
	Grape (raisine)		5,000 Captan MRID 409856-01 Naled 432239-01	
Tree Nuts	Almond, Filbert, Macadamia ,Pecan Pistachio, Walnut	Harvest operations are knocking the nuts, sweeping and blowing the nuts into windows, Pickup and hauling to huller. Pruning, Brush removal, Weed control, Mowing, Tree spraying, and Irrigation.	47.5 (MRID # 418486-04) for tree shakers only	Min 1.5
			4,000 All other activities	Max 4.5
Cereal grains	Corn (unspecified), Corn, field, Corn, Pop Corn, Sweet, Sorghum, grain	Weed Control, Irrigation, Harvesting (highly mechanized)	2,500	Min 1.5
				Max 2.5
Tropical and Subtropical Fruits	Avocado, Date, Persimmons	Tree pruning, Irrigation, Fertilization, Fruit harvest	2,500	Min 1.5
			4,000	Max 4.5
			10,000	
Herbs and Spices	Mint	Harvesting (highly mechanized), Irrigation, Weeding	1,000	Min 1.5
				Max 2.5
	Hops	Hand harvesting	4,000	Min 1.5
			10,000	Max 2.5
Oil seed Crop	Cotton, Peanut, Jojoba	Weeding/hoeing	63 (MRID # 426891-03)	1.6
		Pest management, Irrigation, Harvesting (highly mechanized),	1,000	
			4,000	
Ornamental Plants	Christmas Tree, Ornamental and/or shade trees, Ornamental, Herbaceous Plants	Farm floor management, Spraying for pest and disease control, Fertilizing, Irrigating, Pruning and brush disposal, Tree removal and replanting	2,500	Min 0.5
			4,000	
			10,000	Max 2.5

3.1.4 Summary of Uncertainties

The postapplication exposure assessment encompasses all of the major uses of propargite throughout the country. It is difficult to assess all of the "typical" agricultural uses for propargite (i.e., actual or predominate application rates and climatological conditions), and therefore, an assessment has been developed which is believed to be realistic and yet provides a reasonable certainty that the

exposures are not underestimated. The assumptions and uncertainties are identified below to be used in risk management decisions:

- *Crop Specific Residues:* A multitude of crops are treated with propargite and crop specific residue data are not available for all situations. Therefore, the use of the available data to "simulate" residues on other crops introduces uncertainties in the setting of reentry intervals. It is reasonable to believe that the residues monitored in the available studies approximate the residues on other crops, but the extent that these residues might be an under- or overestimate is unknown. The DFR results from these crops may alter the surrogate assessment for determining REIs.

- *Transfer Coefficients:* The transfer coefficients selected are based on the activities monitored in the submitted studies and on HED's policy for surrogate values until the results of the Agricultural Reentry Task Force (ARTF) are available. These values are believed to be reasonable estimates that would not underestimate the risks.

- *Exposure Duration:* The amount of time (e.g., days) that a worker would be involved in postapplication activities is not available. Therefore, both short-term and intermediate-term exposure durations are provided and the intermediate-term duration is believed to be most representative for the postapplication exposures. Furthermore, the REIs are calculated at the residue level predicted on a specific day after treatment; subsequent declining residue levels (i.e., average residues under the dissipation curve) are not incorporated into the assessment because of the lack of exposure duration data (including the fact that harvesters may travel to multiple fields). Note: Scouts are assumed to be exposed eight hours per day, which may be an overestimation.

3.2 Risk From Postapplication Exposures

3.2.1 Contact Rates and Crop Grouping Matrix

The calculated daily dermal absorbed dose and MOEs based on the DFR data and transfer coefficients discussed in Table 8 in the *Postapplication Exposures & Assumptions* section above, are presented in Appendix B, Tables B1 through B15. These tables present the short- and intermediate-term surrogate assessments that are designed to encompass the majority of harvesting scenarios for propargite treated crops at the application rates of 0.5 to 4.5 lb ai/acre. Because the toxicological endpoint is from an oral study for the short and intermediate-term assessment a 14 percent dermal absorption factor applied.

Table 8 presents the summary of the reentry intervals (REIs) for the potential dermal contact rates as presented in detail in Appendix B. The REI is set at the day after treatment (DAT) that the MOE is 100 or greater. Duration of exposure activities (i.e., days engaged in sort/pack, irrigation, harvesting, etc.) are presumed to be of an intermediate-term duration. Nonetheless, for a complete assessment, Table 9 presents both the short-term (1 to 7 days) and intermediate-term (7 to 90 days) assessment of REIs.

3.2.2 Summary of Postapplication MOEs

Short-term Risks

The target dermal MOE is 100 for propargite. The results of the occupational postapplication assessment are presented in Appendix B, Tables B1-B15, and are summarized below:

- Propargite MOEs equal or exceed 100 for weeding and hoeing associated with legume vegetable, roots and tuber vegetable and non grass animal feed on the 1st day. For irrigation on the 3rd day. (2.5 lb ai/acre)

- Propargite MOEs equal or exceed 100 for all activities associated with citrus at 2.5 lb ai acre on 31st day, 3.15 lb ai/acre 35th day and at 4.5 lb ai/acre at 41st day.

- Propargite MOEs equal or exceed 100 for sort/pack /tree removal of ornamental associated with stone fruits, pome fruits, tropical and subtropical fruits, and ornamental plants at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on 0,0, 1st and 6th day, respectively. Propargite MOEs equal or exceed 100 for mowing/irrigation/weed control associated with stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants and forest trees at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on 0,0, 5th and 11th day respectively. Propargite MOEs equal or exceed 100 for harvesting associated with stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on 0, 9th, 14th and 20th day. respectively.

- Propargite MOEs equal or exceed 100 for all activities associated with berries on the 2nd day. (2.0 lb ai/acre)

- Propargite MOEs equal or exceed 100 for associated with harvesting grapes at 2.88 lb ai/acre on 21st day (raisin grape 11th day).

- Propargite MOEs equal or exceed 100 for tree shakers associated with tree nuts at 3.0 lb and 4.5 ai/acre on the first day and for all other activities on 26th, 34th day respectively.

- Propargite MOEs equal or exceed 100 for All activities with cereal grains, non-grass animal feed at 2.46 lb ai/acre on 9th day.

- Propargite MOEs equal or exceed 100 for weeding and irrigation for hops at 2.5 lb ai/acre on 45th day and for harvesting on 67th day.
- Propargite MOEs equal or exceed 100 for all activities on mint at 2.5 lb ai/acre on 3rd day.
- Propargite MOEs equal or exceed 100 for weeding and hoeing for oil seed at 1.6 lb ai/acre on 0 day, for early season scouting on 0 day and for late season scouting on 8th day.

Intermediate-term Risks

The target MOE is100 for propargite. The resulting occupational postapplication assessments, as shown in Appendix B, Tables B1 through B15 indicate that:

- Propargite MOEs equal or exceed 100 for weeding and hoeing associated with legume vegetable, roots and tuber vegetable and non grass animal feed on the 1st day. For irrigation on the 5th day. (2.5 lb ai/acre).

- Propargite MOEs equal or exceed 100 for all activities associated with citrus at 2.5 lb ai acre on 35th day, 3.15 lb ai/ acre 39th day and at 4.5 lb ai/acre at 45th day.

- Propargite MOEs equal or exceed 100 for sort/pack /tree removal of ornamental associated with stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on first, 3rd and 9th day. respectively. Propargite MOEs equal or exceed 100 for mowing/irrigation/weed control associated with stone fruits, pome fruits, tropical and subtropical fruits, ornamental plants at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on 0,3rd, 8th and 13th day respectively. Propargite MOEs equal or exceed 100 for harvesting associated with stone fruits, pome fruits, tropical and subtropical fruits, ornamental
  plants and forest trees at 0.5, 1.5, 2.5 and 4.5 lb ai/acre on 1st, 12th, 16th and 20th day. respectively.

- Propargite MOEs equal or exceed 100 for all activities associated with berries on the 6th day. (2.0 lb ai/acre).

- Propargite MOEs equal or exceed 100 for harvesting grapes at 2.88 lb ai/acre on 27thday (Raisin grapes 15th day).

- Propargite MOEs equal or exceed 100 for tree shakers associated with tree nuts at 3.0 and 4.5 lb ai/acre on the first day and for all other activities on 31st and 39th day respectively.

- Propargite MOEs equal or exceed 100 for activities with cereal grains, non-grass animal feed at 2.46 ai/acre on 10th day.

- Propargite MOEs equal or exceed 100 for weeding and irrigation for hops at 2.5 lb ai/acre on 51st day and for harvesting on 73rd day.
- Propargite MOEs equal or exceed 100 for all activities on mint at 2.5 lb ai/acre on 5th day.
- Propargite MOEs equal or exceed 100 for weeding and hoeing for oil seed at 1.6 lb ai/acre on 0 day, for early season scouting on 0 day and for late season scouting on 10th day.

3.2.3 Summary of Cancer

REIs have been estimated using the short- and intermediate-term endpoints. Additionally, the cancer endpoint was used to estimate REIs. HED's target range for cancer probabilities are 1E-4 to 1E-6 for occupational assessments. Historically, setting REIs on cancer endpoints has been difficult because of the need for lifetime use assumptions. To estimate the LADD (Life time Average Daily Dose) the typical application rate, the number of days worked per year, and the number of years one would be exposed during a working lifetime are needed. Each one of these variables are dependent upon many factors. For example, the number of days worked per year must correspond to the days worked when the pesticide of concern has been applied. Additionally, the residue dissipation over the work interval should be estimated. Without an estimate for residue dissipation one needs to assume (unrealistically) that the worker travels from one treated field to another so that the highest residue value is always found. In the case of propargite, a screening estimate was developed because lifetime use data are not available. The screening level estimate assumed: (1) that workers would be exposed for 7 to 14 days (for short- and intermediate-term durations, respectively); (2) no residue dissipation; (3) range of application rates; and (4) a worker would be exposed for 35 years. Based on these assumptions, the cancer probabilities on the day the REIs were estimated using the subchronic endpoints, ranged from 2.9E-4 to 3.2E-4. Although, the cancer estimates do not meet the criteria for 1E-4, further refinements are not made at this time because of the lack of use data and/or more appropriate methods for setting REIs based on cancer endpoints. HED does not believe that the cancer estimates are of concern given the high end assumptions used in the calculations.

Table 9. Summary of the Short- and Intermediate-Term Reentry Intervals (REIs) for the Contact Rates and Crop Grouping Matrix.

Crop grouping	Crop	Short Term- REI (days)				Intermediate -Term REI (days)			
		2.5 lb ai/A				2.5 ib ai/A			
Roots and Tuber Vegetable	Carrot, Potato, Sugar beet, Bean dry, Alfalfa, Clover	3				5			
Legume Vegetables									
Non-grass Animal Feed									
Citrus Fruits	Crop	2.5 lb ai/A	3.15 lb ai/A	4.5 lb ai/A		2.5 lb ai/A	3.15 lb ai/A	4.5 lb ai/A	
	Orange, Lemon, Lime, Tangerine, Grapefruit,	31	35	41		35	39	45	
Pome Fruits	Crop	0.5 lb ai/A	1.5 lb ai/A	2.5 lb ai/A	4.5 lb ai/A	0.5 lb ai/A	1.5lb ai/A	2.5 lb ai/A	4.5 lb ai/A
Stone Fruits	Quince, Cherry, Nectarine, Prune, Avocado, Date, Persimmons, X mas Tree, Ornamental and/or shade trees Ornamental, Herbaceous Plants	0	9	14	20	1	12	16	22
Tropical and Subtropical Fruits									
Ornamental Plants									
Berries	Crop	2.0 lb ai/A				2.0 lb ai/A			
	Boysenberry, Currant, Raspberry	2				6			
Small fruits	Crop	3.0lb ai/A				3.0 lb ai/acre			
	Grape (raisin)	11				15			
	Grape (others)	21				27			
Tree Nuts	Crop	3.0 lb ai/acre		4.5 lb ai/A		3.0 lb ai/A		4.5 lb ai/A	
	Almond, Filbert, Macadamia, Pecan, Pistachio, Walnut	26		34		31		39	
	Almond, Filbert, Macadamia, Pecan, Pistachio, Walnut (tree shaking)	0		0		0		0	
	Crop	2.5 lb ai/A				2.5 lb ai/A			
Cereal grains	Corn (unspecified, field, pop, sweet) Sorghum, grain	9				10			
Herbs and Spices	Crop	2.5 lb ai/A				2.5 lb ai/A			
	hops	67				73			
	mint	3				5			
Oil seed	Crop	1.6 lb ai/A				1.6 lb ai/A			
	Cotton, Peanut, Jojoba	8				10			

APPENDIX A

SHORT- TERM AND INTERMEDIATE- TERM HANDLER EXPOSURE RISK

TABLES A1 THROUGH A4

Table A1: Occupational Handler Short-term and Intermediate-term Risk from Propargite at Baseline

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crops	Baseline Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
Mixer/Loader Exposure										
Mixing/Loading Liquid for Aerial Application (1a)	Roots and Tuber Vegetable	Carrot, Sugar beet Potatoes, Dry Beans Mint	2.9	4.736	4.060	1	<1	1.2	0.0120	4135
	Legume Vegetable			5.921	5.075	1	<1		0.0150	3305
	Herbs and Spices	Hops		1.353	1.160	4	3		0.0034	14465
	Citrus Fruits	Grape Fruit, Orange		2.115	1.812	3	2		0.0054	9260
	Tree Nuts	Almond, Walnut		2.115	1.812	3	2		0.0050	9260
				3.806	3.263	2	1		0.0096	5145
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain Alfalfa, Clover		3.553	3.045	2	1		0.0090	5510
	Non-grass Animal Feed			5.921	5.075	1	<1		0.0150	3305
	Oil Seed	Cotton		3.789	3.248	2	1		0.0096	5165
				12.992	11.136	<1	<1		0.0329	1505
		Peanut, Jojoba		3.553	3.045	2	1		0.0090	5510
				5.921	5.075	1	<1		0.0150	3305
	Ornamental Plants	Christmas Tree Conifer seeds		2.115	1.813	3	2		0.0054	9260
Mixing/Loading Liquid for Chemigation (1b)	Roots and Vegetable	Potatoes, Corn (sweet)	2.9	4.737	4.060	1	1	1.2	0.0120	4135
	Cereal Grains			5.921	5.075	1	<1		0.0150	3305
Mixing/Loading Liquid for Groundboom Application (1c)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover, Cotton, Peanut, Jojoba, Mint	2.9	0.812	0.696	7	6	1.2	0.0021	24110
	Cereal Grains									
	Non- grass Animal Feed			1.353	1.160	4	3		0.0034	14465
	Oil Seed									
	Herbs and spices									
Mixing/Loading Liquid for Airblast Application (1d)	Pome Fruits	Quince, Cherry Prune, Orange Grapefruit, Lemon Lime, Tangerine, Lemon, Boysenberry, Current, Raspberry, (Black, Red), Hops, Date, Persimmons	2.9	0.406	0.348	15	10	1.2	0.0010	48220
	Stone Fruits									
	Citrus Fruits									
	Berries									

Table A1: Occupational Handler Short-term and Intermediate-term Risk from Propargite at Baseline

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crops	Baseline Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
	Herbs and Spices									
	Tropical and Subtropical Fruits									
	Tree Nuts	Almond, Filbert, Macadamia nut, Pecan, Pistachio		0.406	0.348	15	10		0.0010	48220
				0.812	0.696	7	6		0.0021	24110
		Walnut		1.218	1.044	5	4		0.0031	16075
	Ornamental plants	Christmas plantations, Conifers, Shade Trees	2.9	0.677	0.580	9	7	1.2	0.0017	28935
Mixing/ Loading Liquid for High Pressure Handwand (1e)	Non-bearing Nursery Stock	All Crops		0.051	0.04	120	90		0.0001	385780
Mixing/Loading Wettable Powder for Aerial Application (2a)	Stone Fruits	Nectarine	3.7	3.238	2.775	2	1	43.4	0.2325	215
	Tree Nuts	Walnut		4.317	3.700	1	1		0.3100	160
	Ornamental plants	Christmas Tree		2.698	2.313	2	2		0.1938	255
Mixing/ Loading wettable Powder for Groundboom Application (2b)	Oil Seed	Peanut	3.7	1.105	0.947	5	4		0.0794	625
Mixing/ Loading Wettable Powder for Airblast Application (2c)	Citrus Fruits	Grapefruit, Orange, Lemon, Avocado	3.7	1.036	0.888	6	5	43.4	0.0744	665
	Tropical and Subtropical Fruits			1.554	1.332	4	3		0.1116	445
	Herbs and Spices	Hops		0.691	0.592	9	7		0.0496	1000
				0.863	0.74	7	5		0.0620	800
	Small fruits	Grapes		1.036	0.888	6	5		0.0744	665
Mixing/ Loading Wettable Powder for High Pressure Handwand (2d)	Non-bearing Nursery Stock	All Crops	3.7	0.022	0.019	280	215	43.4	0.0016	32000
				0.108	0.093	55	45		0.0078	6400
Applicator Exposure										
Applying Spray with Fixed- Wing Aircraft (3)	Roots and Tuber Vegetable	Carrot, Sugar beet Potatoes, Dry Beans, Mint, Hops	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control

Table A1: Occupational Handler Short-term and Intermediate-term Risk from Propargite at Baseline

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crops	Baseline Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
	Legume Vegetable									
	Herbs and Spices									
	Citrus Fruits	Grapefruit, Orange								
	Tree Nuts	Almond, Walnut								
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain Alfalfa, Clover								
	Non-grass Animal Feed									
	Oil Seed	Cotton,								
		Peanut, Jojoba								
	Stone Fruits	Nectarine								
	Ornamental Plants	Christmas Tree Conifer Seed								
Applying liquid with a Groundboom Sprayer (4)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover, Cotton, Peanut, Jojoba, Mint	0.014	0.004	0.003	1530	1190	0.74	0.0013	39100
	Cereal Grains									
	Non- grass Animal feed			0.007	0.006	920	715		0.0021	23460
	Oil Seed									
	Herbs and Spices									
Applying Liquid with an Airblast Sprayer (5)	Pome Fruits	Quince, Cherry Prune, Orange Grapefruit, Lemon Avocado, Lime Tangerine, Lemon, Boysenberry, Current, Raspberry (Black, Red), Hops Date, Persimmons Almond	0.36	0.05	0.043	120	95	4.5	0.0039	12860
	Stone Fruits									
	Citrus Fruits									
	Berries									
	Herbs and Spices									
	Tropical and Subtropical Fruits									
	Small Fruits	Filbert, Macadamia nut, Pecan, Pistachio Walnut, Grapes Christmas plantations, Conifers, Shade Trees		0.15	0.13	40	30		0.0116	4285
	Tree Nuts									
	Ornamental Plants									

Table A1: Occupational Handler Short-term and Intermediate-term Risk from Propargite at Baseline

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crops	Baseline Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
Applying Liquid with a High Pressure Handwand (6)	Non-bearing Nursery stock	All Crops	1.8	0.01	0.009	570	445	79	0.0028	17580
				0.05	0.045	115	90		0.0141	3515
Flagger Exposure										
Flagging Aerial Spray Application (7)	Roots and Tuber Vegetable	Carrot, Sugar beet	0.011	0.018	0.015	335	260	0.35	0.0035	14170
	Legume Vegetable	Potatoes, Dry Beans, Mint		0.022	0.019	265	210		0.0044	11335
	Herbs and Spices	Hops		0.005	0.004	1170	910		0.0010	49600
	Citrus Fruits	Grapefruit, Orange		0.008	0.007	750	580		0.0016	31745
	Tree Nuts	Almond, Walnut		0.008	0.007	750	580		0.0016	31745
				0.014	0.012	415	325		0.0028	17635
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover		0.013	0.012	445	345		0.0026	18895
	Non-grass Animal Feed			0.022	0.019	265	210		0.0044	11335
	Oil Seed Crop	Cotton		0.014	0.012	415	325		0.0028	17715
				0.049	0.042	120	95		0.0096	5165
		Peanut, Jojoba		0.013	0.012	445	345		0.0026	18895
				0.022	0.019	265	210		0.0044	11355
	Stone Fruits	Nectarine		0.01	0.008	625	485		0.0019	26455
	Ornamental Plants	Christmas Tree, Conifer Seed		0.008	0.007	750	580	0.35	0.0016	31745

[a] Baseline dermal unit exposure represents long pants, long sleeved shirt, **no gloves**, open mixing/loading, open cab tractor.
[b] Short-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (60 kg).
[c] Intermediate-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (70 kg).
[d] Short-term Dermal MOE = NOAEL (6 mg/kg/day)/Short-term Daily Dermal Dose (mg/kg/day).
[e] Intermediate-term MOE = NOAEL (4 mg/kg/day)/Intermediate-term Daily Dermal Dose (mg/kg/day)
[f] Baseline inhalation unit exposure represents no respirator
[g] Daily Inhalation Dose (mg/kg/day) = Daily Inhalation Exposure (mg/day)/ Body weight (70 kg).
[h] Short-Intermediate-term Inhalation MOE = LOAEL (49.6 mg/kg/day)/ Daily Inhalation Dose (mg/kg/day).

Table A2: Occupational Handler Short-term and Intermediate-term Risk from Propargite with additional PPE

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crop	PPE Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	PPE Inhalation Unit Exposure (mg/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
Mixer/Loader Exposure										
Mixing/Loading Liquid for Aerial Application (1a)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes, Dry Beans, Mint	0.023	0.038	0.032	160	125	0.12	NA	NA
	Legume Vegetable			0.047	0.040	130	100		NA	NA
	Herbs and Spices	Hops		0.011	0.009	560	435		NA	NA
	Citrus Fruits	Grapefruit, Orange		0.017	0.014	360	280		NA	NA
	Tree Nuts	Almond, Walnut		0.017	0.014	360	280		NA	NA
				0.030	0.026	200	155		NA	NA
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover		0.028	0.024	215	165		NA	NA
	Non-grass Animal Feed			0.047	0.040	130	100		NA	NA
	Oil Seed	Cotton		0.030	0.026	200	155		NA	NA
				0.103	0.088	60	45		NA	NA

Table A2: Occupational Handler Short-term and Intermediate-term Risk from Propargite with additional PPE

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crop	PPE Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	PPE Inhalation Unit Exposure (mg/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
		Peanut, Jojoba		0.028	0.024	215	165		NA	NA
				0.047	0.040	130	100		NA	NA
	Ornamental Plants	Christmas Tree, Conifer Seed		0.017	0.014	360	280		NA	NA
Mixing/Loading Liquid for Chemigation (1b)	Roots and Vegetable	Potatoes, Corn (sweet)	0.023	0.038	0.032	160	125		NA	NA
	Cereal Grains			0.047	0.040	130	100		NA	NA
Mixing/Loading Liquid for Groundboom Application (1c)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover Cotton, Peanut, Jojoba Mint	0.023	0.006	0.006	930	725	NA	NA	NA
	Cereal Grains									
	Non- grass animal feed			0.011	0.009	560	435		NA	NA
	Oil Seed									
	Herbs and Spices									
Mixing/Loading Liquid for Airblast Application (1d)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon, Lime, Tangerine Boysenberry, Current Raspberry, (Black, Red), Hops, Date, Persimmons	0.023	0.003	0.003	1865	1450	NA	NA	NA
	Stone Fruits									
	Citrus Fruits									
	Berries									
	Herbs and Spices									
	Tropical and Subtropical Fruits									
Mixing/Loading Liquid for Airblast Application (1d)	Tree Nuts	Almond, Filbert, Macadamia nut, Pecan, Pistachio	0.023	0.003	0.003	1865	1450	NA	NA	NA
				0.006	0.006	930	725		NA	NA
		Walnut		0.010	0.008	620	485		NA	NA
	Ornamental Plants	Christmas plantations, Conifers, Shade Trees		0.005	0.005	1120	870		NA	NA
Mixing/ Loading Liquid for High Pressure Handwand (1e)	Non-bearing Nursery Stock	All Crops		NA	0.0004	NA	11595		NA	NA
Mixing/Loading Wettable Powder for Aerial Application (2a)	Stone Fruits	Nectarine	0.17	0.149	0.128	40	30	4.3	0.023	2155
	Tree Nuts	Walnut		0.198	0.170	30	25		0.031	1615

Table A2: Occupational Handler Short-term and Intermediate-term Risk from Propargite with additional PPE

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crop	PPE Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	PPE Inhalation Unit Exposure (mg/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
	Ornamental Plants	Christmas Tree		0.124	0.106	50	40		0.019	2585
Mixing/ Loading Wettable Powder for Groundboom Application (2b)	Oil Seed	Peanut		0.051	0.044	120	90		0.008	6310
Mixing/ Loading Wettable Powder for Airblast Application (2c)	Citrus Fruits	Grapefruit, Orange, Lemon, Avocado		0.048	0.041	125	100		0.0073	6730
	Tropical and Subtropical Fruits			0.071	0.061	85	65		0.011	4485
	Herbs and Spices	Hops		0.032	0.027	190	145		NA	NA
				0.040	0.034	150	120		0.006	8075
	Small Fruits	Grapes	0.17	0.048	0.041	125	100	4.3	0.007	6730
Mixing/ Loading Wettable Powder for High Pressure Handwand (2d)	Non-bearing Nursery Stock	All Crops		NA	NA	NA	NA		NA	NA
				0.0050	0.0043	1210	940		NA	NA
Applicator Exposure										
Applying Spray with Fixed- Wing Aircraft (3)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes, Dry Beans, Mint	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control	See Eng. Control
	Legume Vegetable									
	Herbs and Spices									
	Citrus Fruits	Grapefruit, Orange								
	Tree Nuts	Almond, Walnut								
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain Alfalfa, Clover								
	Non-grass Animal Feed									
	Oil Seed Crop	Cotton,								
		Peanut, Jojoba								
	Stone Fruits	Nectarine								
	Ornamental Plants	Christmas Tree, Conifer Seed,								

Table A2: Occupational Handler Short-term and Intermediate-term Risk from Propargite with additional PPE

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crop	PPE Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	PPE Inhalation Unit Exposure (mg/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
Applying Liquid with Groundboom Sprayer (4)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover, Cotton, Peanut, Jojoba Mint	NA	NA	NA	NA	NA	NA	NA	NA
	Cereal Grains									
	Non- grass Animal Feed									
	Oil Seed		NA	NA	NA	NA	NA	NA	NA	NA
	Herbs and Spices									
Applying Liquid with Airblast Sprayer (5)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon Lime, Tangerine, Lemon, Boysenberry Current, Raspberry (Black, Red) Hops, Date, Persimmons, Almond	0.24	NA	0.029	NA	140	NA	NA	NA
	Stone Fruits									
	Citrus Fruits									
	Berries									
	Herbs and Spices									
	Tropical and Subtropical Fruits									
	Small fruits	Filbert, Macadamia nut, Pecan, Pistachio Walnut, Grapes Xmas Plantations, Conifers, Shade Trees	0.12	0.050	0.046	120	90	NA	NA	NA
	Tree Nuts									
	Ornamental Plants									
Applying Liquid with a High Pressure Handwand (6)	Non-bearing Nursery Stock	All Crops	0.64	NA	NA	NA	NA	NA	NA	NA
				NA	0.016	NA	250		NA	NA
Flagger Exposure										
Flagging Aerial Spray Application (7)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes, Dry Beans, Mint	NA	NA	NA	NA	NA	NA	NA	NA
	Legume Vegetable			NA	NA	NA	NA		NA	NA
	Herbs and Spices									
	Citrus Fruits	Grapefruit, Orange		NA	NA	NA	NA		NA	NA
	Tree Nuts	Almond, Walnut		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Cereal Grains	Corn (field, pop, sweet),Sorghum grain, Alfalfa, Clover		NA	NA	NA	NA		NA	NA
	Non-grass Animal Feed			NA	NA	NA	NA		NA	NA

Table A2: Occupational Handler Short-term and Intermediate-term Risk from Propargite with additional PPE

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Crop	PPE Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	PPE Inhalation Unit Exposure (mg/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-Intermediate-term MOE[h]
	Oil Seed	Cotton		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
		Peanut, Jojoba		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Stone Fruits	Nectarine		NA	NA	NA	NA		NA	NA
	Ornamental Plants	Christmas Tree, Conifer Seed		NA	NA	NA	NA		NA	NA

[a] PPE dermal unit exposure represents long pants, long sleeved shirt, **gloves**, open mixing/loading, open cab tractor.
For scenario 5 at 4.5 lb ai/acre long pants, long sleeved shirt, coveralls and chemical resistance head gear.

[b] Short-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (60 kg).

[c] Intermediate-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (70 kg).

[d] Short-term Dermal MOE = NOAEL (6 mg/kg/day)/Short-term Daily Dermal Dose (mg/kg/day).

[e] Intermediate-term MOE = NOAEL (4 mg/kg/day)/Intermediate-term Daily Dermal Dose (mg/kg/day)

[f] Baseline inhalation unit exposure represents use of organic vapor removing respirator (90% PF)

[g] Daily Inhalation Dose (mg/kg/day) = Daily Inhalation Exposure (mg/day)/ Body weight (70 kg).

[h] Short- Intermediate-term Inhalation MOE = LOAEL (49.6 mg/kg/day)/ Daily Inhalation Dose (mg/kg/day).

Table A3: Occupational Handler Short-term and Intermediate-term Risk from Propargite with Engineering Control

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Croup	Eng. Control Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Eng Control Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-intermediate-term MOE[h]
Mixer/Loader Exposure										
Mixing/Loading Liquid for Aerial Application (1a)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes, Dry Bean, Mint	0.0086	NA	NA	NA	NA	NA	NA	NA
	Legume Vegetable			NA	NA	NA	NA		NA	NA
	Herbs and Spices	Hops		NA	NA	NA	NA		NA	NA
	Citrus Fruits	Grapefruit, Orange		NA	NA	NA	NA		NA	NA
	Tree Nuts	Almond, Walnut		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa Clover		NA	NA	NA	NA		NA	NA
	Non-grass Animal Feed			NA	NA	NA	NA		NA	NA
	Oil Seed	Cotton		NA	NA	NA	NA		NA	NA
				0.0385	0.033	155	120		NA	NA
		Peanut, Jojoba		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Ornamental Plants	Christmas Tree, Conifer Seed,		NA	NA	NA	NA		NA	NA
Mixing/Loading Liquid Formulation for Chemigation (1b)	Roots and Vegetable	Potatoes, Corn (sweet)	NA	NA	NA	NA	NA	NA	NA	NA
	Cereal Grains			NA	NA	NA	NA		NA	NA
Mixing/Loading Liquid for Groundboom Application (1c)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain Alfalfa, Clover, Cotton, Peanut, Jojoba, Mint		NA	NA	NA	NA		NA	NA
	Cereal Grains									
	Non- grass animal feed			NA	NA	NA	NA		NA	NA
	Oil Seed									
	Herbs and Spices									
Mixing/Loading Liquid for Airblast Application (1d)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon, Lime, Tangerine, Boysenberry, Current Raspberry (Black, Red) Hops, Date Persimmons	NA	NA	NA	NA	NA	NA	NA	NA
	Stone Fruits									
	Citrus Fruits									
	Berries									

Table A3: Occupational Handler Short-term and Intermediate-term Risk from Propargite with Engineering Control

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Croup	Eng. Control Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Eng Control Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-intermediate-term MOE[h]
	Herbs and Spices									
	Tropical and Subtropical Fruits									
	Tree Nuts	Almond, Filbert, Macadamia nut, Pecan, Pistachio		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
		Walnut		NA	NA	NA	NA		NA	NA
	Ornamental Plants	Christmas plantations, Conifers, Shade Trees		NA	NA	NA	NA		NA	NA
Mixing/ Loading Liquid for High Pressure Handwand (1e)	Non-bearing Nursery Stock	All Crops	NA	NA	NA	NA	NA	NA	NA	NA
Mixing/Loading Wettable Powder for Aerial Application (2a)	Stone Fruits	Nectarine	0.021	0.018	0.016	325	255	NA	NA	NA
	Tree Nuts	Walnut		0.025	0.021	245	190		NA	NA
	Ornamental Plants	Christmas Tree		0.015	0.013	390	305		NA	NA
Mixing/ Loading Wettable Powder for Groundboom Application (2b)	Oil Seed	Peanut	0.021	NA	0.005	NA	745	NA	NA	NA
Mixing/ Loading Wettable Powder for Airblast Application (2c)	Citrus Fruits	Grapefruit, Orange, Lemon, Avocado	0.021	NA	NA	NA	NA	NA	NA	NA
	Tropical and subtropical Fruit			0.009	0.008	680	530		NA	NA
	Herbs and Spices	Hops		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Small Fruits	Grapes		NA	NA	NA	NA		NA	NA
Mixing/ Loading Wettable Powder for High Pressure Handwand (2d)	Non-bearing Nursery Stock	All Crops	NA	NA	NA	NA	NA	NA	NA	NA
				NA	NA	NA	NA		NA	NA
Applicator Exposure										

Table A3: Occupational Handler Short-term and Intermediate-term Risk from Propargite with Engineering Control

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Croup	Eng. Control Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Eng Control Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-intermediate-term MOE[h]
Applying Spray with Fixed -Wing Aircraft (3)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes Dry Beans, Mint	0.005	0.008	0.007	735	570	0.068	0.0007	72940
	Legume Vegetable			0.010	0.009	585	455		0.0009	58355
	Herbs and Spices	Hops		0.002	0.002	2570	2000		0.0002	255295
	Citrus Fruits	Grapefruit, Orange		0.004	0.003	1645	1280		0.0003	163390
	Tree Nuts	Almond, Walnut		0.004	0.003	1645	1280		0.0003	163390
				0.007	0.006	915	710		0.0006	90770
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa Clover		0.006	0.005	980	760		0.0005	97255
	Non-grass Animal Feed			0.010	0.009	590	455		0.0009	58355
	Oil Seed	Cotton		0.007	0.006	920	715		0.0005	97255
				0.022	0.019	270	210		0.0018	26600
		Peanut, Jojoba		0.006	0.005	980	760		0.0005	56595
				0.010	0.009	590	455		0.0008	58350
	Stone Fruits	Nectarine		0.004	0.004	1370	1065		0.0004	136155
	Ornamental Plants	Christmas Tree, Conifer Seed		0.004	0.003	1645	1280		0.0003	163390
Applying Liquid with Groundboom Sprayer (4)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover, Cotton, Peanut, Jojoba, Mint	NA	NA	NA	NA	NA	NA	NA	NA
	Cereal Grains									
	Non- grass Animal Feed									
	Oil Seed			NA	NA	NA	NA		NA	NA
	Herbs and Spices									
Applying with Airblast Sprayer (5)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon Lime, Tangerine, Lemon Boysenberry, Current, Raspberry (Black, Red), Hops, Date, Persimmons, Almond	0.17	NA	NA	NA	NA	NA	NA	NA
	Stone Fruits									
	Citrus Fruits									
	Berries									
	Herbs and Spices									
	Tropical and Subtropical Fruits									

Table A3: Occupational Handler Short-term and Intermediate-term Risk from Propargite with Engineering Control

Exposure Scenario (Scenario #)	Crop Treated		Baseline Dermal					Baseline Inhalation		
	Crop Grouping	Specific Croup	Eng. Control Dermal Unit Exposure (mg/lb ai)[a]	Short-term Daily Dose (mg/kg/day)[b]	Int-term Daily Dose (mg/kg/day)[c]	Short-term MOE[d]	Int.-term MOE[e]	Eng Control Inhalation Unit Exposure (ug/lb ai)[f]	Daily Dose (mg/kg/day)[g]	Short-intermediate-term MOE[h]
Applying Liquid with Airbast Sprayer (5)	Small fruits	Filbert, Macadamia nut, Pecan, Pistachio, Walnut, Grapes, Christmas Plantations, Conifers, Shade Trees	0.17	0.008	0.007	750	570	NA	NA	NA
	Tree Nuts									
	Ornamental Plants									
Applying Liquid with a High Pressure Handwand (6)	Non-bearing Nursery Stock	All Crops	NA	NA	NA	NA	NA	NA	NA	NA
				NA	NA	NA	NA		NA	NA
Flagger Exposure										
Flagging Aerial Spray Application (7)	Roots and Tuber Vegetable	Carrot, Sugar beet, Potatoes, Dry Beans, Mint	0.00022	NA	NA	NA	NA	NA	NA	NA
	Legume Vegetable			NA	NA	NA	NA		NA	NA
	Herbs and Spices									
	Citrus Fruits	Grapefruit, Orange		NA	NA	NA	NA		NA	NA
	Tree Nuts	Almond, Walnut		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover		NA	NA	NA	NA	NA	NA	NA
	Non-grass Animal Feed			NA	NA	NA	NA		NA	NA
	Oil Seed	Cotton,		NA	NA	NA	NA		NA	NA
				NA	0.00845	NA	4735		NA	NA
		Peanut, Jojoba		NA	NA	NA	NA		NA	NA
				NA	NA	NA	NA		NA	NA
	Stone Fruits	Nectarine		NA	NA	NA	NA		NA	NA
	Ornamental Plants	Christmas Tree, Conifer Seed,		NA	NA	NA	NA		NA	NA

[a] Engineering Controls dermal unit exposure value represents
1a long pants, long sleeved shirt, and chemical resistance gloves while using closed mixing systems (98 percent protection factor)
2a, 2b, 2c soluble packages used. (No gloves except for forest plantation)
3, Enclosed cockpits, single layer clothes, no gloves
5,7 Enclosed cab, single layer clothes, no gloves

[b] Short-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (60 kg).

[c] Intermediate-term Daily Dermal Dose (mg/kg/day) = Daily Dermal Exposure (mg/day)/ Body weight (70 kg).

[d] Short-term Engineering Control MOE = NOAEL (6 mg/kg/day)/ Daily Dermal Dose (mg/kg/day).

[e] Intermediate-term Engineering Control Dermal MOE = NOAEL (4 mg/kg/day)/ Daily Dermal Dose (mg/kg/day).

[f] Engineering Control inhalation unit exposure represents enclosed cockpits, no respirator

[g] Daily Inhalation Dose (mg/kg/day) = Daily Inhalation Exposure (mg/day)/ Body weight (70 kg).
[h] Short-Intermediate-term Engineering Control Inhalation MOE = LOAEL (49.6 mg/kg/day)/ Daily Inhalation Dose (mg/kg/day).

Table A4: Exposure Scenario Descriptions for the Use of Propargite

Exposure Scenario (Number)	Data Source	Standard Assumptions[a] (8-hr work day)	Comments[b]
Mixer/Loader Exposure			
Mixing/Loading Liquid Formulations (1a/1b/1c/1d/1e)	PHED V1.1	350 acres for aerial, except 350 to 1200 acres for cotton, 125 acres for walnut, and 125 acres for orchard trees and Christmas trees, 80 acres for hops. 350 acres for chemigation of agriculture, 80 acres for groundboom in agriculture, ornamental nurseries and 40 acres for orchard airblast applications and 5 acres for treatment of ornamentals when using a high pressure/ handwand	**Baseline:** Hand, dermal, and inhalation = AB grades. Hand = 53 replicates; Dermal = 72 to 122 replicates; and Inhalation = 85 replicates. High confidence in hand, dermal and inhalation data. No protection factor was needed to define the unit exposure value. **PPE:** The same dermal data are used as for the baseline coupled with a 50% protection factor to account for an additional layer of clothing. A 5-fold PF (e.g. 80% PF was applied to the baseline inhalation data to account for the use of a dust mist respirator. Hands = AB grades. Hands = 59 replicates. High confidence in hands, dermal data. **Engineering Controls**::Hands, dermal, and inhalation = AB grades. Hands = 31 replicates; Dermal= 16 to 22; and Inhalation = 27 replicates. High confidence in hands/dermal, and inhalation data. No protection factor was needed to define the unit exposure value. Engineering controls based on closed mixing/loading.
Mixing/Loading Wettable Powder (2a/2b/2c/2d)	PHED V1.1	350 acres for aerial, except 125 acres for walnut, and 125 acres for orchard trees and Christmas trees 350 acres for chemigation of agriculture, 80 acres for groundboom in agriculture, 40 acres for orchard airblast applications 5 acres for treatment of ornamentals when using a high pressure/ handwand	**Baseline:** Hands, dermal and inhalation = ABC grades. Hands = 7 replicates, dermal = 22-45 replicates and inhalation = 44 replicates. Low confidence in dermal, hands data due to the low number of hand replicates. Medium confidence in inhalation data. **PPE**: Gloved data for hands = ABC grades. Hands = 24 replicates. Medium confidence in hands data. Dermal values calculated by applying a 50% protection factor to baseline values to account for an additional layer of clothing. A 5-fold PF (e.g. 80% PF was applied to the baseline inhalation data). **Engineering Controls**: Water soluble bags. Dermal = AB grades. Hands and inhalation = All grade. Inhalation = 15 replicates, dermal = 6-15 replicates and hands = 5 replicates. Low confidence in the dermal, hands and inhalation data.

Table A4: Exposure Scenario Descriptions for the Use of Propargite

Exposure Scenario (Number)	Data Source	Standard Assumptions[a] (8-hr work day)	Comments[b]
Applicator Exposure			
Applying with a Fixed-Wing Aircraft (3)	PHED V1.1	350 acres for aerial, except 350 to 1200 acres for cotton, 125 acres for walnut, and 125 acres for orchard trees and Christmas trees, 80 acres for hops	**Engineering Controls:** Hands = AB grade, dermal and inhalation = ABC grade. Medium confidence in hands/dermal and inhalation data. Hands = 34 replicates, dermal = 24-48 replicates, and inhalation = 23 replicates.
Applying Sprays with a Groundboom Sprayer (4)	PHED V1.1 MRID # 41848606	80 acres in agricultural, ornamental settings	**Baseline:** Hand, dermal, and inhalation = AB grades. Hands = 29 replicates, dermal = 23 to 42 replicates, and inhalation = 22 replicates. High confidence in hand, dermal, and inhalation data.
Applying to Orchards with an Airblast Sprayer (5)	PHED V1.1 MRID #s 41848605 42099702	40 acres for orchard spraying	**Baseline**: Hand, dermal and inhalation are AB grade. Hands 22 replicates, dermal = 32 to 49 replicates, and inhalation = 47 replicates. High confidence in hand, dermal and inhalation data. **PPE**: Hands and dermal = AB grade. Hands = 18 replicates, dermal = 31-48 replicates. High confidence in hands and dermal data. **Engineering Controls**: Dermal = AB grade, inhalation = ABC grade. Low confidence in inhalation and dermal data. Inhalation = 9 replicates, dermal = 20-30 replicates.
Mixing/Loading/Applying with a High Pressure Handwand (6)	PHED V1.1	5 acres for ornamentals and for agricultural settings.	**Baseline:** Dermal = AB grades, inhalation = A grade. Dermal = 7-13 replicates; inhalation = 13 replicates. Gloved data was used to calculate the no gloved hand data, assuming gloves provide 90% protection. Hands = C grade with 13 replicates. Low confidence in hand, dermal, and inhalation data. Baseline data includes use of chemical-resistant gloves. **PPE:** The same dermal data are used as for the baseline coupled with a 50% protection factor to account for an additional layer of clothing. Hands data = C grade with 13 replicates. Low confidence in hand and dermal data. A 5-fold PF (e.g. 80% PF) was applied to the baseline inhalation data.
Flagger exposure			
Flagging Spray Applications (7)	PHED V1.1	350 acres for aerial, except 350 to 1200 acres for cotton,125 acres for walnut, and 125 for Christmas trees, orchard trees and 80 acres for hops	**Baseline:** Hands, dermal and inhalation data = AB grades. High confidence in dermal, hands and inhalation. Hands = 30 replicates, Inhalation = 28 replicates, and dermal = 18-28 replicates. **PPE:** Not feasible **Engineering Controls**:98% protection added to baseline for a flagger in an enclosed cab truck.

a Standard Assumptions based on an 8-hour work day as estimated by HED.

b "Best Available" grades are defined by OREB SOP for meeting Subdivision U Guidelines. Best available grades are assigned as follows: matrices with grades A and B data and a minimum of 15 replicates; if not available, then grades A, B and C data and a minimum of 15 replicates; if not available, then all data regardless of the quality and number of replicates. Data confidence are assigned as follows:
High = grades A and B and 15 or more replicates per body part
Medium= grades A, B, and C and 15 or more replicates per body part
Low= grades A, B, C, D and E or any combination of grades with less than 15 replicates

APPENDIX B

SHORT- TERM AND INTERMEDIATE- TERM POSTAPPLICATION EXPOSURE/ RISK

TABLES B1 THROUGH B15

Table B1. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Dry Beans

Weeding/hoeing activities- Dry Beans applied at 2.5 lb ai/acre Transfer Coefficient = 60.0 cm^2/hr[a]								Irrigation activities Dry Beans applied at 2.5 lb ai/acre Transfer Coefficient =1000 cm^2/hr[b]					
DAT[c]	DFR[d] ($\mu g/cm^2$)	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70				
0	4.55	0.0051	0.0044	1200	915	1.79E-4	3.60E-5	0.0849	0.0728	70	55	2.99E3	6.01E-4
3	3.21	NA	NA	NA	NA	NA	NA	0.0600	0.0513	100	80	2.11E-3	4.24E-4
5	2.54	NA	NA	NA	NA	NA	NA	NA	0.0406	NA	100	1.6E-3	3.22E-4

[a] Assumed to represent weeding and hoeing

[b] Assumed to represent Irrigation

[c] DAT = days after treatment.

[d] Based on DFR data from a study of postapplication Propargite residues on dry-beans using an application rate of 2.46 lb ai/acre (MRID #426891-04)

[e] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[f] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[g] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[h] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[I] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B2. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Citrus

All activities - Citrus applied at 4.5 lb ai/acre Transfer Coefficient = 10,000 cm^2/hr[a]								All activities - Citrus applied at 2.5 lb ai/acre Transfer Coefficient = 10,000 cm^2/hr[a]							All activities - Citrus applied at 3.15 lb ai/acre Transfer Coefficient = 10,000 cm^2/hr[a]						
DAT[b]	DFR[c]	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Inte-term MOE[f]	LADD[g]	Cancer[h]	DFR[c]	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Int-term MOE[f]	LADD[g]	Cancer[h]	DFR[c]	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Int-term MOE[f]	LADD[g]	Cancer[h]
		BW 60	BW 70						BW 60	BW 70						BW 60	BW 70				
0	3.985	0.744	0.64	8	5	2.6E-2	5.3E-3	2.214	0.41	0.35	15	10	1.46E-2	2.9E-3	2.789	0.52	0.45	11	9	1.8E-2	3.7E-3
21	1.087	0.203	0.17	30	25	7.14E-3	1.4E-3	0.604	0.11	0.10	55	40	3.97E-3	8.0E-4	0.761	0.14	0.12	45	35	3.0E-3	1.0E-3
28	0.705	0.132	0.11	45	35	4.63E-3	9.3E-4	0.391	0.07	0.06	80	65	2.57E-3	5.2E-4	0.493	0.09	0.08	65	50	3.24E-3	6.5E-4
31	0.585	0.109	0.09	55	45	3.85E-3	7.7E-4	0.325	0.06	0.05	100	75	2.14E-3	4.3E-4	0.410	0.08	0.07	80	60	2.69E-3	5.4E-4
35	0.457	0.09	0.07	70	55	3.0E-3	6.0E-4	0.254	NA	0.04	NA	100	1.67E-3	3.4E-4	0.320	0.06	0.05	100	80	2.10E-3	4.2E-4
39	0.357	0.1	0.04	90	70	2.35E-3	4.7E-4	NA	NA	NA	NA	NA	NA	NA	0.250	NA	0.04	NA	100	1.63E-3	3.3E-4
41	0.315	0.06	0.05	100	80	2.07E-3	4.2E-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
45	0.246	NA	0.04	NA	100	1.62E-3	3.3E-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

[a] Assumed to represent all activities applying Omite CR at 3.15 lb ai/acre

[b] DAT = days after treatment.

[c] Based on DFR ($\mu g/cm^2$) data from a study of postapplication of Propargite (Omite CR®) on navel oranges using an application rate of 3.15 lb ai/acre (MRID # 409090-30). Data normalized to an application rate of 2.5 lb ai/acre. (labeled application rate for the rest of crops within citrus group)

[d] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[e] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[f] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[g] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[h] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B3. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Apple

Sort/ pack/tree removal Ornamentals application rate 0.5 lb ai/acre Transfer coefficient 2,500 cm^2/hr[a]								Mowing/irrigation/weed control application rate 0.5 lb ai/acre Transfer coefficient 4,000 cm^2/hr[b]						Harvesting application rate 0.5 lb ai/acre Transfer coefficient 10,000 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	0.3	0.0128	0.011	470	365	4.51E-4	9.07E-5	0.0205	0.0176	290	230	7.22E-4	1.45E-4	0.0513	0.0439	117	90	1.81E-3	3.64E-4
1	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0395	NA	100	1.63E-3	2.8E-4

[a] Assumed to represent sort/pack/tree removal
[b] Assumed to represent mowing/irrigation/weed control
[c] Assumed to represent harvesting
[d] DAT = days after treatment
[e] Based on DFR data from a study of postapplication of Propargite (Omite 30 w ®) on apple using an application rate of 3.6 ai/acre (MRID # 409090-04). Data normalized to present application of Propargite at 0.5 lb ai/acre.
[f] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].
[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.
[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.
[I] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.
[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B4. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Apple, continued

Sort/pack/tree removal Ornamentals application rate 1.5 lb ai/acre Transfer coefficient 2,500 cm^2/hr[a]								Mowing/irrigation/weed control application rate 1.5 lb ai/acre Transfer coefficient 4,000 cm^2/hr[b]						Harvesting application rate 1.5 lb ai/acre Transfer coefficient 10,000 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[j]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	0.8	0.0384	0.0330	150	120	1.35E-3	2.71E-4	0.0615	0.0527	100	75	2.17E-3	4.36e-4	0.1538	0.1318	40	30	5.42E-3	1.09E-3
3	0.60	NA	NA	NA	NA	NA	NA	NA	0.0384	NA	105	1.58E-4	3.18E-5	0.1121	0.0961	55	40	3.95E-3	7.94E-4
7	0.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0736	0.0630	80	65	2.59E-3	5.21E-4
9	0.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0596	0.0511	100	80	2.10E-3	4.22E-4
12	0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0372	NA	105	1.53E-3	3.08E-4

[a] Assumed to represent sort/pack/tree removal
[b] Assumed to represent mowing/irrigation/weed control
[c] Assumed to represent harvesting
[d] DAT = days after treatment
[e] Based on DFR data from a study of postapplication of Propargite (Omite 30 w ®) on apple using an application rate of 3.6 ai/acre (MRID # 409090-04). Data normalized to represent an application rate of 1.5 lb ai/acre.
[f] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].
[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.
[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.
[I] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.
[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B5. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Apple, continued

Sort/pack/tree removal Ornamentals application rate 2.5 lb ai/acre Transfer coefficient 2,500 cm^2/hr[a]								Mowing/irrigation/weed control application rate 2.5 lb ai/acre Transfer coefficient 4,000 cm^2/hr[b]						Harvesting application rate 2.5 lb ai/acre Transfer coefficient 10,000 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	1.4	0.0641	0.0549	95	75	2.26E-3	4.54E-4	0.1025	0.0879	60	45	3.61E-3	7.26E-4	0.2563	0.2197	25	20	9.03E-3	1.82E-3
1	1.24	0.0577	0.0494	105	80	2.03E-3	4.08E-4	0.0923	0.0791	65	50	3.25E-3	6.53E-4	0.2307	0.1977	25	20	8.13E-3	1.63E-3
3	1.00	NA	0.0400	NA	100	1.65E-3	3.32E-4	0.0747	0.0641	80	60	2.63E-3	5.29E-4	0.1868	0.1602	30	25	6.58E-3	1.32E-3
5	0.81	NA	NA	NA	NA	NA	NA	0.0605	0.0519	100	75	2.13E-3	4.28E-4	0.1513	0.1297	40	30	5.33E-3	1.07E-3
8	0.59	NA	NA	NA	NA	NA	NA	NA	0.0378	NA	105	1.55E-3	3.12E-4	0.1103	0.0946	55	40	3.89E-3	7.82E-4
14	0.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0586	0.0503	102	75	2.07E-3	4.16E-4
16	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0407	NA	100	1.67E-3	3.36E-4

[a] Assumed to represent sort/pack/tree removal

[b] Assumed to represent mowing/irrigation/weed control

[c] Assumed to represent harvesting

[d] DAT = days after treatment

[e] Based on DFR data from a study of postapplication of Propargite (Omite 30 w ®) on apple using an application rate of 3.6 ai/acre (MRID # 409090-04). Data normalized to represent an application rate of 2.5 lb ai/acre.

[f] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[I] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B6. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Apple, continued

Sort/pack/tree removal Ornamentals application rate 4.5 lb ai/acre Transfer coefficient 2,500 cm^2/hr[a]								Mowing/irrigation/weed control application rate 4.5 lb ai/acre Transfer coefficient 4,000 cm^2/hr[b]						Harvesting application rate 4.5 lb ai/acre Transfer coefficient 10,000 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[j]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	2.5	0.1153	0.0989	50	40	4.06E-3	8.16E-4	0.1845	0.1582	35	25	6.50E-3	1.31E-3	0.4613	0.3954	15	10	1.63E-2	3.28E-3
3	1.80	0.0841	0.0721	70	55	2.96E-3	5.95E-4	0.1345	0.1153	45	35	4.47E-3	8.98E-4	0.3363	0.2883	20	15	1.18E-2	2.37E-3
6	1.31	0.0600	0.05	100	75	2.16E-3	4.34E-4	0.0981	0.0841	60	50	3.45E-3	6.93E-4	0.2452	0.2102	25	20	8.64E-3	1.74E-3
9	0.96	NA	0.04	NA	105	1.57E-3	3.16E-4	0.0715	0.0613	85	65	2.52E-3	5.07E-4	0.1787	0.1532	35	25	6.30E-3	1.27E-3
11	0.78	NA	NA	NA	NA	NA	NA	0.0579	0.0496	100	80	2.04E-3	4.10E-4	0.1448	0.1241	40	30	5.10E-3	1.03E-3
13	0.63	NA	NA	NA	NA	NA	NA	NA	0.0402	NA	100	1.65E-3	3.32E-4	0.1173	0.1005	50	40	4.13E-3	8.30E-4
20	0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0561	0.0481	106	85	1.98E-3	3.98E-4
22	0.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0389	NA	105	1.60E-3	3.22E-4

[a] Assumed to represent sort/pack/tree removal
[b] Assumed to represent mowing/irrigation/weed control
[c] Assumed to represent harvesting
[d] DAT = days after treatment
[e] Based on DFR data from a study of postapplication of Propargite (Omite 30 w ®) on apple using an application rate of 3.6 ai/acre (MRID # 409090-04). Data normalized to 4.5 lb ai/acre for Avocado.
[f] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].
[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.
[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.
[I] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.
[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B7. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Boysenberry, Current and Raspberry (Black, Red)

All activities - Berries applied at 2.0 lb ai/acre Transfer Coefficient = 4,000 cm^2/hr[a]							
DAT[b]	DFR[c] ($\mu g/cm^2$)	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Intermediate-term MOE[f]	LADD[g]	Cancer[h]
		BW 60	BW 70				
0	0.9	0.0670	0.0574	90	70	2.36E-3	4.74E-4
1	0.84	0.0629	0.0539	95	75	2.22E-3	4.46E-4
2	0.79	0.0592	0.0507	100	80	2.08E-3	4.18E-4
6	0.62	NA	0.0396	NA	100	1.63E-3	3.28E-4

[a] Assumed to represent all activities

[b] DAT = days after treatment.

[c] Based on DFR data from a study of postapplication of Propargite (Omite 6E®) on grape using an application rate of 2.88 ai/acre (MRID # 418486-03). Data normalized to account for an application rate of 2.0 lb ai/acre.

[d] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[e] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[f] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[g] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[h] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B8. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Grape

Tractor driver 2 days application rate2.88 lb ai/acre Transfer coefficient 878 cm^2/hr[a]								Cane Turners 14 days application rate 2.88 lb ai/acre Transfer coefficient 10246 cm^2/hr[b]						Cane Turners 21 days application rate 2.88 lb ai/acre Transfer coefficient 3713 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	1.3	0.0457	0.0181	285	220	7.45E-4	4.92E-5	0.2470	0.2117	25	20	8.70E-3	1.75E-3	0.0895	0.0767	65	50	3.15E-3	6.33E-4
3	1.07	NA	NA	NA	NA	NA	NA	0.2051	0.1758	30	25	7.23E-3	1.45E-3	0.0743	0.637	80	65	2.62E-3	5.27E-4
7	0.84	NA	NA	NA	NA	NA	NA	0.1601	0.1373	35	30	5.64E-3	1.13E-3	0.1601	0.1373	105	80	2.04E-3	4.10E-4
11	0.65	NA	NA	NA	NA	NA	NA	NA	NA	50	40	4.37E-3	8.78E-4	NA	0.1072	NA	105	1.60E-3	3.22E-4
14	0.54	NA	NA	NA	NA	NA	NA	0.1039	0.0890	90	45	3.66E-3	7.36E-4	NA	NA	NA	NA	NA	NA
21	0.35	NA	NA	NA	NA	NA	NA	0.0673	0.0577	100	70	2.37E-3	4.76E-4	NA	NA	NA	NA	NA	NA
23	0.31	NA	NA	NA	NA	NA	NA	NA	0.0510	NA	80	2.10E-3	4.22E-4	NA	NA	NA	NA	NA	NA
27	0.24	NA	NA	NA	NA	NA	NA	NA	0.0398	NA	100	1.64E-3	3.30E-4	NA	NA	NA	NA	NA	NA

[a] Assumed to represent tractor driver entering after two days
[b] Assumed to represent cane turners entering after 14 days
[c] Assumed to represent cane turners entering after 21 days
[d] DAT = days after treatment
[e] Based on DFR data from a study of postapplication of Propargite (Omite 6 E ®) on grape using an application rate of 2.88 ai/acre (MRID # 418486-03)
[f] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].
[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.
[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.
[I] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.
[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B9. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Grape, continued

Cane turners 28 days applied at 2.88 lb ai/acre Transfer Coefficient = 1895 cm^2/hr[a]								Harvesting Raisin grape applied at 2.88 lb ai/acre Transfer Coefficient =5,000 cm^2/hr[b]					
DAT[c]	DFR[d] ($\mu g/cm^2$)	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70				
0	1.3	0.0457	0.0391	130	100	1.61E-3	3.24E-4	0.1205	0.1033	50	40	4.25e-3	8.5e-4
3	1.07	NA	NA	NA	NA	NA	NA	1.1001	0.0858	60	45	3.53e-3	7.1e-4
7	0.84	NA	NA	NA	NA	NA	NA	0.0782	0.0670	75	60	2.75e-3	5.5e-4
11	0.65	NA	NA	NA	NA	NA	NA	0.0610	0.0523	100	75	2.15e-3	4.3e-4
14	0.54	NA	NA	NA	NA	NA	NA	NA	0.0408	NA	100	1.68e-3	3.4e-4
15	0.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
21	0.35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
29	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
33	0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

[a] Assumed to represent cane turners entering after 28 days

[b] Assumed to represent harvesting

[c] DAT = days after treatment.

[d] Based on DFR data from a study of postapplication Propargite residues (Omite 6 E ®) on grape using an application rate of 2.88 ai/acre (MRID # 418486-03)

[e] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[f] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[g] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[h] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[I] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B10. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for tree nuts

Open cab tree shaker applied at 3.0lb ai/acre Transfer Coefficient = 48 cm^2/hr[a]								All other activities applied at 3.0lb ai/acre Transfer Coefficient =4,000 cm^2/hr[b]					
DAT[c]	DFR[d] ($\mu g/cm^2$)	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70				
0	3.1	0.0027	0.0023	2250	1750	9.46E-5	1.09E-5	0.2285	0.1958	25	20	8.05E-3	1.62E-3
7	2.14	NA	NA	NA	NA	NA	NA	0.1596	0.1368	40	30	5.62E-3	1.13E-3
14	1.49	NA	NA	NA	NA	NA	NA	0.1114	0.0955	55	40	3.92E-3	7.88E-4
21	1.04	NA	NA	NA	NA	NA	NA	0.0778	0.0667	75	60	2.74E-3	5.51E-4
26	0.81	NA	NA	NA	NA	NA	NA	0.0602	0.0516	100	80	2.12E-3	4.26E-4
28	0.73	NA	NA	NA	NA	NA	NA	NA	0.0466	NA	85	1.91E-3	3.84E-4
31	0.62	NA	NA	NA	NA	NA	NA	NA	0.0399	NA	100	1.64E-3	3.30E-4

[a] Assumed to represent open cab tree shaker

[b] Assumed to represent all other activities

[c] DAT = days after treatment.

[d] Based on DFR data from a study of postapplication propargite residues on almond using an application rate of 3.0 lb ai/acre (MRID # 418486-03)

[e] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[f] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[g] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[h] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[I] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B11. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for tree nuts, continued

Open cab tree shaker applied at 4.5lb ai/acre Transfer Coefficient = 48 cm^2/hr[a]								All other activities applied at 4.5lb ai/acre Transfer Coefficient =4,000 cm^2/hr[b]					
DAT[c]	DFR[d] ($\mu g/cm^2$)	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Intermediate-term MOE[g]	LADD[h]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70				
0	4.6	0.0040	0.0035	1500	1160	1.42E-4	2.85E-5	0.3427	0.2938	20	15	1.21E-2	2.43E-3
7	3.21	NA	NA	NA	NA	NA	NA	0.2393	0.2051	25	20	8.43E-3	1.69E-3
14	2.26	NA	NA	NA	NA	NA	NA	0.1671	0.1433	35	30	5.89E-3	1.18E-3
21	1.56	NA	NA	NA	NA	NA	NA	0.1167	0.1000	50	40	4.11E-3	8.26E-3
26	1.21	NA	NA	NA	NA	NA	NA	0.0903	0.0744	65	50	3.18E-3	6.39E-4
28	1.09	NA	NA	NA	NA	NA	NA	0.0815	0.0699	75	60	2.87E-3	5.77E-4
34	0.8	NA	NA	NA	NA	NA	NA	0.0599	0.0514	100	80	2.11E-3	4.24E-4
39	0.62	NA	NA	NA	NA	NA	NA	NA	0.0397	NA	100	1.63E-3	3.28E-4

[a] Assumed to represent open cab tree shaker

[b] Assumed to represent all other activities

[c] DAT = days after treatment.

[d] Based on DFR data from a study of postapplication propargite residues on almond using an application rate of 3.0 lb ai/acre (MRID # 418486-03). Data normalized to 4.5 lb ai/acre to account for the application on walnut.

[e] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[f] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[g] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[h] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[I] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

Table B12. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Corn

All activities - Corn applied at 2.46 lb ai/acre Transfer Coefficient =10,000 cm^2/hr[a]							
DAT[b]	DFR[c] ($\mu g/cm^2$)	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Intermediate-term MOE[f]	LADD[g]	Cancer[h]
		BW 60	BW 70				
0	1.7	0.3243	0.2779	20	15	1.14E-2	2.29E-3
3	0.96	0.1788	0.1532	35	25	6.30E-3	1.27E-3
7	0.43	0.0808	0.0693	75	60	2.85E-3	5.73E-4
9	0.29	0.0544	0.0466	110	85	1.91E-3	3.84E-4
10	0.24	NA	0.0382	NA	105	1.57E-3	3.16E-4

[a] Assumed to represent all activities

[b] DAT = days after treatment.

[c] Based on DFR data from a study of postapplication of Propargite (Comite EC®) on corn using an application rate of 2.46b ai/acre (MRID # 416803-02)

[d] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[e] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[f] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[g] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[h] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B13. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Hops

Weeding/irrigation of hops applied at 2.5lb ai/acre Transfer Coefficient = 4,000 cm^2/hr[a]								Harvesting of hops applied at 2.5lb ai/acre Transfer Coefficient =10,000 cm^2/hr[b]					
DAT[c]	DFR[d] ($\mu g/cm^2$)	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[h]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[h]	Cancer[j]
		BW 60	BW 70					BW 60	BW 70				
0	5	0.3703	0.3174	15	12	1.52E-2	3.06E-3	0.9258	0.7936	6	5	3.26E-2	6.55E-3
7	3.73	0.2783	0.2385	20	15	1.14E-2	2.29E-3	0.6957	0.5963	9	7	2.45E-2	4.92E-3
10	3.24	0.240	0.210	25	20	8.53E-3	1.7E-3	0.0605	0.5186	10	8	2.13E-2	4.3E-3
14	2.80	0.2091	0.1792	30	20	8.59E-3	1.73E-3	0.5228	0.4481	12	9	1.84E-2	3.70E-3
16	2.54	0.190	0.160	32	25	6.67e-3	1.3E-3	0.4736	0.4060	13	10	1.67E-2	3.4E-3
21	2.10	0.1571	0.1347	40	30	6.46E-3	1.30E-3	0.3928	0.3367	15	12	1.38E-2	2.77E-3
28	1.58	0.1181	0.1012	50	40	4.85E-3	9.75E-4	0.2952	0.2530	20	15	1.04E-2	2.09E-3
45	0.79	0.0506	0.0487	100	80	2.42E-3	4.86E-4	0.1475	0.1264	40	30	5.19E-3	1.04E-3
51	0.62	NA	0.0396	NA	100	1.9E-3	3.82E-4	0.1154	0.0989	50	40	4.07E-3	8.18E-4
67	0.32	NA	NA	NA	NA	NA	NA	0.0601	0.0515	100	80	2.12E-3	4.26E-4
73	0.25	NA	NA	NA	NA	NA	NA	NA	0.0403	NA	100	1.66E-3	3.34E-4

[a] Assumed to represent early season activities (weeding and irrigation)

[b] Assumed to represent late season activities/harvesting

[c] DAT = days after treatment.

[d] Based on DFR data from a study of postapplication propargite residues (Omite CR) on hops using an application rate of 1.35 lb ai/acre (MRID # 413996-01)

[e] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[f] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[g] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[h] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[I] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B14. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for mint

All activities mint applied at 2.5 lb ai/acre Transfer Coefficient =1000 cm^2/hr[a]							
DAT[b]	DFR[c] ($\mu g/cm^2$)	Dermal Dose[d] (mg/kg/day)		Short-term MOE[e]	Intermediate-term MOE[f]	LADD[g]	Cancer[h]
		BW 60	BW 70				
0	4.55	0.0849	0.0728	70	55	2.99E3	6.01E-4
3	3.21	0.0600	0.0513	100	80	2.11E-3	4.24E-4
5	2.54	NA	0.0406	NA	100	1.6E-3	3.22E-4

[a] Assumed to represent all activities for mint

[b] DAT = days after treatment.

[c] Based on DFR data from a study of postapplication Propargite residues on **dry-beans using an application rate of 2.46 lb ai/acre (MRID #426891-04)**

[d] Dose (mg/kg/day) = [DFR ($\mu g/cm^2$) x TC (cm^2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[E] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[f] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[g] For agricultural scenarios, LADD = [DFR ($\mu g/cm^2$) x Tc (cm^2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[h] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = $2.01x10^{-1}$ $(mg/kg/day)^{-1}$

Table B15. Propargite Short-Term and Intermediate-Term Occupational Postapplication Assessment for Cotton

Weeding/hoeing application rate 1.64 lb ai/acre Transfer coefficient 63.0 cm^2/hr[a]								Scouting early season application rate 1.64 lb ai/acre Transfer coefficient 1,000 cm^2/hr[b]						Scouting late season application rate 1.64 lb ai/acre Transfer coefficient 4,000 cm^2/hr[c]					
DAT[d]	DFR[e] ($\mu g/cm^2$)	Dermal Dose[f] (mg/kg/day)		Short-term MOE[g]	Inter-term MOE[h]	LADD[i]	Cancer[j]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]	Dermal Dose[e] (mg/kg/day)		Short-term MOE[f]	Inter-term MOE[g]	LADD[o]	Cancer[i]
		BW 60	BW 70					BW 60	BW 70					BW 60	BW 70				
0	2.0	0.0023	0.0020	2630	2050	8.04E-5	1.62E-5	0.0368	0.0316	165	125	1.30E-3	2.61E-4	0.1473	0.1263	40	30	5.2E-3	1.05E-3
3	1.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1038	0.0890	60	45	3.7E-3	7.44E-4
8	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0580	0.050	105	80	8.7E-3	4.26E-4
10	0.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0394	NA	100	6.9E-3	3.36E-4

[a] assume to represent weeding/hoeing

[b] assume to represent scouting early season

[c] assume to represent scouting late season

[d] DAT = days after treatment

[e] Based on DFR data from a study of postapplication of Propargite (Comite EC ®) on cotton using an application rate of 1.64 ai/acre (MRID # 414578-06)

[f] Dose (mg/kg/day) = [DFR (μg/cm2) x TC (cm2/hr) x CF (1 mg/1,000 mg) x ET (hrs) / BW (kg)].

[g] Short-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 6 mg/kg/day.

[h] Intermediate-term MOE = NOAEL (mg/kg/day) / Dose (mg/kg/day); where NOAEL = 4 mg/kg/day.

[I] For agricultural scenarios, LADD = [DFR (μg/cm2) x Tc (cm2/hr) x mg/1,000 μg x hours exposed/day x exposure days/year x years of exposure x dermal absorption factor] / [body weight in kg x 70 yr x 365 days/yr]. , where adult body weight = 70 kg,.

[i] Cancer Risk = LADD (mg/kg/day) x Q1* (mg/kg/day), where Q1* = 2.01×10^{-1} $(mg/kg/day)^{-1}$

APPENDIX C

OCCUPATIONAL HANDLER INTERMEDIATE-TERM CANCER (Q^*) RISKS

TABLE C

Table C: Occupational Handler Intermediate-term Cancer (Q*) Risk for Propargite

Exposure Scenario #	Crop Grouping	Specific Crops	TotalBaseline Daily Dose (mg/kg/day)[ca]	Baseline Daily LADD[b] 7/14	Baseline Risk[c] 7/14	PPE Total Daily Dose[d]	PPE LADD[e] 7/14	PPE RISK[f] 7/14	Eng. Cont. Total Daily Dose[g]	Eng. Cont. LADD[h] 7/14	Eng. Control Risk[i] 7/14
Mixer/Loader Exposure											
Mixing/Loading Liquid for Aerial Application (1a)	Roots and Tuber Vegetable	Carrot, Sugar beet Potatoes, Dry Bean, Mint	4.072	3.9E-2/7.8E-2	7.9E-3/1.6E-2	0.0442	4.2E-4/8.5E-4	8.4E-5/1.7E-4	0.013	1.2E-4/2.5E-4	2.1E-5/4.8E-5
	Legume Vegetable		5.09	4.9E-2/9.8E-2	9.8E-3/2.0E-2	0.055	5.3E-4/1.1E-3	1.1E-4/2.1E-4	0.016	1.5E-4/3.1E-4	3.0E-5/6.0E-5
	Herbs and Spices	Hops	1.163	1.1E-2/2.2E-2	2.2E-3/4.4E-3	0.013	1.2E-4/2.4E-4	2.4E-5/4.8E-5	0.0037	3.5E-5/7.0E-5	7.0E-6/1.4E-5
	Citrus Fruits	Grape Fruit, Orange	1.818	1.7E-2/3.5E-2	3.5E-3/7.0E-3	0.020	1.9E-4/3.8E-4	3.8E-5/7.6E-5	0.0057	5.5E-5/1.1E-4	1.1E-5/2.2E-5
	Tree Nuts	Almond, Walnut	1.818	1.7E-2/3.5E-2	3.5E-3/7.0E-3	0.020	1.9E-4/3.8E-4	3.8E-5/7.6E-5	0.0057	5.5E-5/1.1E-4	1.1E-5/2.2E-5
			3.273	3.1E-2/6.3E-2	6.3E-3/1.3E-2	0.036	3.4E-4/6.5E-4	6.8E-5/1.4E-4	0.01	9.9E-5/2.0E-4	2.0E-5/4.0E-5
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover	3.054	2.9E-2/5.9E-2	5.9E-3/1.2E-2	0.033	3.2E-4/6.4E-4	6.4E-5/1.3E-4	0.0097	9.3E-5/1.9E-4	1.9E-5/3.7E-5
	Non-grass Animal Feed		5.09	4.9E-2/9.8E-2	9.8E-3/2.0E-2	0.055	5.3E-4/1.1E-3	1.1E-4/2.1E-4	0.016	1.5E-4/3.1E-4	3.1E-5/6.2E-5
	Oil Seed	Cotton	3.258	3.1E-2/6.2E-2	6.3E-3/1.3E-2	0.035	3.4E-4/6.8E-4	6.8E-5/1.4E-4	0.01	9.9E-5/2.0E-4	2.0E-5/4.0E-5
			11.169	1.1E-1/2.2E-1	2.2E-2/4.4E-2	0.12	1.2E-3/2.4E-3	2.4E-4/4.8E-4	0.035	3.4E-4/6.8E-4	6.8E-5/1.4E-4
		Peanut, Jojoba	3.054	2.9E-2/5.8E-2	5.9E-3/1.2E-2	0.033	3.2E-4/6.4E-4	6.4E-5/1.3E-4	0.0097	9.3E-5/1.9E-4	1.9E-5/3.7E-5
			5.09	4.9E-2/9.8E-2	9.8E-3/2.0E-2	0.055	5.3E-4/1.1E-3	1.1E-4/2.1E-4	0.0016	1.5E-4/3.0E-4	3.0E-5/6.0E-5
	Ornamental plants	Christmas Tree Conifer seeds	1.818	1.7E-2/3.3E-2	3.5E-3/7.0E-3	0.020	1.9E-4/3.8E-4	3.8E-5/7.6E-5	0.0057	5.5E-5/1.1E-5	1.1E-5/2.2E-5
Mixing/Loading Liquid for Chemigation (1b)	Roots and Vegetable	Potatoes, Corn (sweet)	4.072	3.9E-2/7.8E-2	7.9E-3/1.6E-2	0.0442	4.2E-4/8.5E-4	8.4E-5/1.7E-4	0.013	1.2E-4/2.5E-4	2.4E-5/4.8E-5
	Cereal Grains		5.09	4.9E-2/9.8E-2	9.8E-3/2.0E-2	0.055	5.3E-4/1.1E-3	1.1E-4/2.1E-4	0.016	1.5E-4/3.1E-4	3.0E-5/6.0E-5
Mixing/Loading Liquid for Groundboom Application (1c)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet) Sorghum grain Alfalfa, Clover Cotton, Peanut Jojoba, Mint	0.698	6.7E-3/1.3E-2	1.4E-3/2.7E-5	0.0076	7.3E-5/1.5E-4	1.5E-5/2.9E-5	0.0022	2.1E-5/4.2E-5	4.2E-6/8.4E-6
	Cereal Grains										
	Non- grass Animal Feed		1.163	1.1E-2/2.2E-2	2.2E-3/4.4E-3	0.013	1.2E-4/2.4E-4	2.4E-5/4.8E-5	0.0037	3.5E-5/7.0E-5	7.0E-6/1.4E-5

Table C: Occupational Handler Intermediate-term Cancer (Q*) Risk for Propargite

Exposure Scenario #	Crop Grouping	Specific Crops	TotalBaseline Daily Dose (mg/kg/day)[ca]	Baseline Daily LADD[b] 7/14	Baseline Risk[c] 7/14	PPE Total Daily Dose[d]	PPE LADD[e] 7/14	PPE RISK[f] 7/14	Eng. Cont. Total Daily Dose[g]	Eng. Cont. LADD[h] 7/14	Eng. Control Risk[i] 7/14
	Oil Seed										
	Herbs and spices										
Mixing/Loading Liquid for Airblast Application (1d)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon Lime, Tangerine Lemon, Boysenberry, Current, Raspberry (Black, Red),Hops, Date, Persimmons	0.349	3.4E-3/6.8E-3	6.7E-4/1.3E-3	0.004	3.6E-5/7.3E-5	7.2E-6/1.5E-5	0.0011	1.1E-5/2.1E-5	2.2E-6/4.4E-6
	Stone Fruits										
	Citrus Fruits										
	Berries										
	Herbs and Spices										
	Tropical and Subtropical Fruits										
	Tree Nuts	Almond, Filbert, Macadamia nut, Pecan, Pistachio	0.349	3.4E-3/6.8E-3	6.7E-4/1.3E-3	0.004	3.6E-5/7.3E-5	7.2E-4/1.5E-5	0.0011	1.1E-5/2.1E-5	2.2E-6/4.4E-6
			0.698	6.7E-3/1.3E-2	1.4E-3/2.7E-3	0.008	7.3E-5/1.5E-4	1.5E-5/3.0E-5	0.0022	2.1E-5/4.5E-5	4.2E-6/8.4E-6
		Walnut	1.047	1.0E-2/2.0E-2	2.0E-3/4.0E-3	0.011	1.1E-4/2.2E-4	2.2E-5/4.4E-5	0.0033	3.2E-5/6.3E-5	6.4E-6/1.3E-5
	Ornamental plants	Christmas plantations, Conifers, Shade Trees	0.582	5.6E-3/1.1E-2	1.1E-3/2.3E-3	0.006	6.1E-5/1.2E-4	1.2E-5/2.6E-5	0.0018	1.8E-5/3.5E-5	3.6E-6/7.2E-6
Mixing/ Loading Liquid for High Pressure Handwand (1e)	Non-bearing Nursery Stock	All Crops	0.0441	4.2E-4/8.4E-4	8.4E-5/17E-4	0.16	1.5E-4/3.0E-4	3.0E-5/6.0E-5	0.00022	2.1E-6/4.2E-6	4.2E-7/8.4E-7
Mixing/Loading Wettable Powder for Aerial Application (2a)	Stone Fruits	Nectarine	3.008	2.9E-2/5.8E-2	5.8E-3/1.2E-2	0.328	3.1E-3/6.3E-3	6.2E-4/1.3E-3	0.017	1.6E-4/3.3E-4	3.3E-5/6.7E-5
	Tree Nuts	Walnut	4.01	3.9E-2/7.8E-2	7.7E-3/1.4E-2	0.437	4.2E-3/8.4E-3	8.4E-4/1.7E-3	0.023	2.4E-4/4.8E-4	4.2E-5/9.7E-5
	Ornamental plants	Christmas Tree	2.507	2.4E-2/4.8E-2	4.8E-3/9.7E-3	0.273	2.6E-3/5.2E-3	4.1E-4/8.3E-4	0.014	1.4E-4/2.7E-4	2.8E-5/5.6E-5
Mixing/ Loading wettable Powder for Groundboom Application (2b)	Oil Seed	Peanut	1.026	9.8E-3/2.0E-2	2.0E-3/3.9E-3	0.12	1.2E-3/2.4E-3	2.4E-4/4.8E-4	0.0058	5.5E-5/1.1E-4	1.1E-5/2.2E-5
Mixing/ Loading Wettable Powder for Airblast Application (2c)	Citrus Fruits Tropical and Subtropical Fruits	Grapefruit, Orange, Lemon, Avocado	0.962	9.2E-3/1.8E-2	1.9E-3/3.7E-3	0.11	1.1E-3/2.2E-3	2.2E-4/4.4E-4	0.0055	5.2E-5/1.0E-4	1.1E-4/2.1E-4
			1.444	1.4E-2/2.8E-2	2.8E-3/5.6E-3	0.17	1.6E-3/3.2E-3	3.2E-4/6.4E-4	0.0082	7.8E-5/1.6E-4	1.6E-5/3.2E-5
	Herbs and Spices	Hops	0.642	6.1E-3/1.2E-2	1.2E-3/2.5E-3	0.076	7.3E-4/1.4E-3	1.5E-4/2.9E-4	0.0036	3.5E-5/7.0E-5	7.0E-6/1.4E-5
			0.802	7.7E-3/1.5E-2	1.6E-3/3.1E-3	0.095	9.0E-4/1.8E-3	1.8E-4/3.6E-4	0.0045	4.4E-5/8.8E-5	8.8E-6/1.8E-5

Table C: Occupational Handler Intermediate-term Cancer (Q*) Risk for Propargite

Exposure Scenario #	Crop Grouping	Specific Crops	TotalBaseline Daily Dose (mg/kg/day)[ca]	Baseline Daily LADD[b] 7/14	Baseline Risk[c] 7/14	PPE Total Daily Dose[d]	PPE LADD[e] 7/14	PPE RISK[f] 7/14	Eng. Cont. Total Daily Dose[g]	Eng. Cont. LADD[h] 7/14	Eng. Control Risk[i] 7/14
	Small fruits	Grapes	0.962	9.2E-3/1.8E-2	1.9E-3/3.7E-3	0.11	1.1E-3/2.2E-3	2.2E-4/4.4E-4	0.0055	5.2E-5/1.0E-4	1.1E-5/2.1E-5
Mixing/ Loading Wettable Powder for High Pressure Handwand (2d)	Non-bearing Nursery Stock	All Crops	0.021	2.0E-4/4.0E-4	4.0E-5/8.0E-5	0.0009	8.1E-6/1.6E-5	1.6E-6/3.3E-6	NA	NA	NA
			0.1	9.6E-4/1.9E-3	1.9E-4/3.8E-4	0.0042	4.1E-5/8.2E-5	8.2E-6/1.7E-6	NA	NA	NA
Applicator Exposure											
Applying Spray with Fixed- Wing Aircraft (3)	Roots and Tuber Vegetable	Carrot, Sugar beet Potatoes, Dry Beans, Mint	See. Eng. Control	See. Eng. Control	See. Eng. Control	See. Eng. Control	See. Eng. Control	See. Eng. Control	0.0077	7.4E-5/1.5E-4	1.5E-5/30E-5
	Legume Vegetable								0.0096	9.2E-4/1.8E-3	1.9E-5/3.8E-5
	Herbs and Spices	Hops							0.0022	2.1E-5/4.2E-5	4.2E-6/8.4E-6
	Citrus Fruits	Grapefruit, Orange							0.0034	3.3E-5/6.6E-5	6.6E-6/1.3E-5
	Tree Nuts	Almond, Walnut							0.0034	3.3E-5/6.6E-5	6.6E-6/1.3E-5
									0.0062	5.9E-5/1.2E-4	1.2E-5/2.4E-5
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover							0.0058	5.5E-5/1.1E-4	1.1E-5/2.2E-5
	Non-grass Animal Feed								0.0096	9.2E-5/1.8E-4	1.9E-5/3.8E-5
	Oil Seed	Cotton							0.0061	5.9E-5/1.2E-4	1.2E-5/2.4E-5
									0.021	2.0E-4/4.0E-4	4.0E-5/8.0E-5
		Peanut, Jojoba							0.0058	5.5E-5/1.1E-4	1.1E-5/2.2E-5
									0.0096	9.2E-5/1.8E-4	1.9E-5/3.8E-5
	Stone Fruits	Nectarine							0.0041	3.9E-5/7.8E-5	7.9E-6/1.6E-5
	Ornamental Plants	Christmas Tree Conifer Seed							0.0033	3.3E-5/6.6E-5	6.4E-6/1.3E-5
Applying liquid with a Groundboom Sprayer (4)	Roots and Vegetable	Potatoes, Corn (field, pop, sweet), Sorghum grain, Alfalfa, Clover Cotton, Peanut Jojoba, Mint	0.0043	4.1e-05/8.2-5	8.9E-6/1.8E-5	0.0039	3.7E-5/7.4E-5	7.4E-6/1.5E-5	0.0013	1.2E-5/2.4E-5	2.4E-6/4.8E-6
	Cereal Grains										
	Non- grass Animal feed		0.0081	7.4E-5/1.5E-4	1.5E-5/3.0E-5	0.0065	6.2E-5/1.2E-4	1.3E-5/2.5E-5	0.0021	2.1E-5/4.2E-5	4.2E-6/8.4E-6
	Oil Seed										
	Herbs and Spices										

Table C: Occupational Handler Intermediate-term Cancer (Q*) Risk for Propargite

Exposure Scenario #	Crop Grouping	Specific Crops	TotalBaseline Daily Dose (mg/kg/day)[ca]	Baseline Daily LADD[b] 7/14	Baseline Risk[c] 7/14	PPE Total Daily Dose[d]	PPE LADD[e] 7/14	PPE RISK[f] 7/14	Eng. Cont. Total Daily Dose[g]	Eng. Cont. LADD[h] 7/14	Eng. Control Risk[i] 7/14
Applying Liquid with an Airblast Sprayer (5)	Pome Fruits	Quince, Cherry, Prune, Orange, Grapefruit, Lemon Avocado, Lime, Tangerine, Boysenberry, Current, Raspberry (Black, Red), Hops, Date, Persimmons, Almond	0.0469	4.5E-4/9.0E-4	9.1E-5/1.8E-4	0.0329	3.2E-4/6.4E-3	6.4E-5/1.3E-4	0.0062	6.0E-5/1.2E-4	1.2E-5/2.4E-5
	Stone Fruits										
	Citrus Fruits										
	Berries										
	Herbs and Spices										
	Tropical and Subtropical Fruits										
	Small Fruits	Filbert, Macadamia nut, Pecan, Pistachio, Walnut, Grapes Christmas plantations, Conifers, Shade Trees	0.1416	1.4E-3/2.8E-3	2.7E-4/5.4E-4	0.0976	9.4E-4/1.9E-3	1.9E-4/3.8E-4	0.022	2.1E-4/4.2E-4	4.2E-5/8.4E-5
	Tree Nuts										
	Ornamental Plants										
Applying Liquid with a High Pressure Handwand (6)	Non- bearing Nursery stock	All Crops	0.0118	1.1E-4/2.5e-4	2.3E-5/4.6E-5	0.006	5.8E-5/1.2E-5	1.2E-5/2.3E-5	NA	NA	NA
			0.0591	5.7E-4/1.1E-3	1.1E-4/2.2E-4	0.030	2.9E-4/5.8E-4	5.8E-5/1.2E-4	NA	NA	NA
Flagger Exposure											
Flagging Aerial Spray Application (7)	Roots and Tuber Vegetable	Carrot, Sugar beet Potatoes, Dry Beans, Mint	0.0185	1.8E-4/3.6E-4	3.6E-5/7.2E-5	NF	NF	NF	NF	NF	NF
	Legume Vegetable		0.0234	2.3E-4/4.6E-4	4.6E-5/9.0E-5	NF	NF	NF	NF	NF	NF
	Herbs and Spices	Hops	0.005	5.2E-5/1.0E-4	1.0E-5/2.0E-5	NF	NF	NF	NF	NF	NF
	Citrus Fruits	Grapefruit, Orange	0.0086	8.1E-5/1.6E-4	1.6E-5/3.3E-5	NF	NF	NF	NF	NF	NF
	Tree Nuts	Almond, Walnut	0.0086	8.1E-5/1.6E-4	1.6E-5/3.3E-5	NF	NF	NF	NF	NF	NF
			0.0148	1.5E-4/3.0E-4	2.9E-5/5.8E-5	NF	NF	NF	NF	NF	NF
	Cereal Grains	Corn (field, pop, sweet), Sorghum grain, Alfalfa,Clover	0.0146	1.4E-4/2.8E-4	2.7E-5/5.4E-5	NF	NF	NF	NF	NF	NF
	Non-grass Animal Feed		0.0234	2.3E-4/4.6E-4	4.6E-5/9.3E-5	NF	NF	NF	NF	NF	NF
	Oil Seed	Cotton	0.0148	1.5E-4/3.0E-4	2.9E-5/5.8E-5	NF	NF	NF	NF	NF	NF
			0.052	5.0E-4/1.0E-3	1.0E-4/2.0E-4	NF	NF	NF	NF	NF	NF
		Peanut, Jojoba	0.0146	1.4E-4/2.8E-4	2.7E-3/5.4E-3	NF	NF	NF	NF	NF	NF
			0.0234	2.3E-4/4.6E-4	4.6E-5/9.3E-5	NF	NF	NF	NF	NF	NF

Table C: Occupational Handler Intermediate-term Cancer (Q*) Risk for Propargite

Exposure Scenario #	Crop Grouping	Specific Crops	TotalBaseline Daily Dose (mg/kg/day)[a]	Baseline Daily LADD[b] 7/14	Baseline Risk[c] 7/14	PPE Total Daily Dose[d]	PPE LADD[e] 7/14	PPE RISK[f] 7/14	Eng. Cont. Total Daily Dose[g]	Eng. Cont. LADD[h] 7/14	Eng. Control Risk[i] 7/14
	Stone Fruits	Nectarine	0.0099	9.7E-5/1.9E-4	1.9E-5/3.8E-5	NF	NF	NF	NF	NF	NF
	Ornamental Plants	Christmas Tree Conifer Seed	0.0086	8.1E-4/1.6E-4	1.6E5/3.2E-5	NF	NF	NF	NF	NF	NF

[a] Baseline Total Daily Dose = [Baseline Daily Dermal Exposure (mg/day) * 0.14 (Dermal Absorption Factor) + Baseline Daily Inhalation Exposure (mg/day)]/Body Weight (70 kg).

[b] Baseline LADD (mg/kg/day) = Baseline Total Daily Dose (mg/kg/day) * (Number of days exposure per year (7 private applicator and 14 for commercial applicator) /365 days per year) * 35 years worked/70 year lifetime.

[c] Baseline Total Cancer Risk = Baseline LADD (mg/kg/day) * (Q_1*), where Q_1* = $2.01e^{-1}$ (mg/kg/day).

[d] PPE Total Daily Dose = [PPE Daily Dermal Exposure (mg/day) * 0.14 (Dermal Absorption Factor) + baseline Daily Inhalation Exposure (mg/day)]/Body Weight (70 kg).

[e] PPE LADD (mg/kg/day) = PPE Total Daily Dose (mg/kg/day) * (Number of days exposure per year (7 private applicator and 14 for commercial applicator) /365 days per year) * 35 years worked/70 year lifetime.

[f] PPE Total Cancer Risk = PPE LADD (mg/kg/day) * (Q_1*), where Q_1* = $2.01e^{-1}$ (mg/kg/day).

[g] Eng. Control Total Daily Dose = [Eng. Control Daily Dermal Exposure (mg/day) * 0.14 (Dermal Absorption Factor) + baseline Daily Inhalation Exposure (mg/day)]/Body Weight (70 kg).

[h] Eng. Control LADD (mg/kg/day) = Eng. control Total Daily Dose (mg/kg/day) * (Number of days exposure per year (7 private applicator and 14 for commercial applicator) /365 days per year) * 35 years worked/70 year lifetime.

[I] Eng. Control Total Cancer Risk = Eng. Control LADD (mg/kg/day) * (Q_1*), where Q_1* = $2.01e^{-1}$ (mg/kg/day).

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3) Pesticide Handler Exposure Database Version 1.1 Surrogate Exposure Table (newly organized) and printed August 1998.

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